POPULAR Computing WEEKLY

Only 40p.

27 September— 3 October 1984

It's the best selling weekly

Vol 3 No 39



THE seventh Personal Computer World Show was held over four days at Olympia last week. Acorn previewed its new business computers, and the new range of Act Apricot computers were on public display for the first time. Full show report inside on page 13

Sinclair profits let-down

SINCLAIR Research's profits rose only by a disappointing £253,000 to £14.28m in the year ending March 1984.

Turn-over rose over the same period from £54.5m to £77.7m, according to Sinclair's Financial Statement for 1984 published last week.

In the report, Sir Clive Sinclair accounts for the relatively small increase in profit against turnover rise by saying that "the pocket television and the QL computer both added to costs in the year but little to sales".

The 42% increase in turnover is attributed to continuing demand both in the UK and overseas for the ZX Spectrum, its peripherals and software.

After Timex pulled out of the US market, due to the price war in the States Sinclair, whose technology was used by Timex also lost a possible £9m plus in turn-over, judging from 1983 figures.

However, the QL is due to be launched in the US before the end of 1984 on mail order, and Sinclair expects it to sell strongly.

Sinclair is apparently relying on high QL sales to increase profits prior to the company's planned flotation next year. Expenditure on raw materials and consumables rose sharply from £33.7m to £54.9m, implying a much heavier research commitment, and stocks of hardware now stand at £7.2m as against £3.8m. The company's net profit fell from 25% of turn-over in 1983 to 18% in 1984.

● *Bandersnatch*, one of the two unfinished Imagine mega-

continued on page 5 ▸

MSX launch

THE MSX computer system was officially launched last week by the seven Japanese members of the UK MSX Working Group — Canon, Hitachi, JVC, Mitsubishi, Sanyo, Sony and Toshiba.

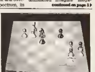
All of the machines are based on the MSX design standard incorporating the Z80 processor and use a version of Basic developed by Microsoft.

The models and prices are as follows: Canon V-20, 64K, £280.00, available end October; Hitachi HB-H80, 64K, price as yet unannounced, available around April 1985; JVC HC-7, 64K, £279.00, available end October (printer and disc drive early 1985), Mitsubishi (two models) ML-F48, 32K, £249.00 and ML-F80, 64K, £299.00, both available in November (discs available in 1988), Sanyo MCP100, 64K £299.95, available mid October; Sony HB-75B (Hit-Bit), 64K plus additional 16K Rom for simple data handling (the UK version, unlike its Japanese counterpart, has a

continued on page 5 ▸

The 1984 Microcomputer Chess Championships have been won by a new program developed by Psion for the QL.

Psion Chess will be available next month, priced at £19.95



ACORN'S ABC PREVIEWED

INSIDE) PCW SHOW) AMSTRAD PAGE) PSION ORGANISER)



CURRAH µSPEECH
Speech Synthesiser for ZX Spectrum
Gate Array technology means you can just plug in and start constructing words and sentences like this
LET S$ = "sp(ee)k (nn)(oo) (ee)vil" will say "speak no evil"! Further commands control the "voicing" of keys as they are pressed, and an intonation facility allows you to add expression to the speech.
µSPEECH is fully compatible with ZX Interface 1 and may be used with the CURRAH µSLOT Expandable Motherboard, allowing easy expansion of your ZX system. µSPEECH and µSLOT will also be compatible with the CURRAH µSOURCE unit when it arrives later this year, allowing you to write Assembler and FORTH statements directly into your BASIC programs!
Top selling games like ULTIMATE'S Lunar Jetman feature µSPEECH voice output — watch out for other titles from Bug Byte, CDS, Ocean, Quicksilva and PSS.
SPECTRUM STORES and
or use the form to order the CURRAH µSPEECH —
CURRAH
See us at the PCW Show Stand 329



POPULAR Computing WEEKLY Vol 3 No 39

) View

So another Personal Computer World Show has come and gone and this year it left me feeling rather flat.

It seemed that the event is now very nicely predictable.

Even taking into account the new Apricots and Acorns, everything remains in its proper place and under control.

A far cry from the same event only a few years ago which could only have been described as a shambles. Yet it was definitely more exciting then.

It was interesting, therefore, that the seven MSX companies decided against exhibiting at the show because they wanted to distance themselves from the 'hobbyist' industry. The show isn't like that anymore — the dedicated 'hobbyist' is fast becoming an endangered species — rather like the unfortunate tiger cubs on the Microvitec stand.

Something important is being lost. Not that a hand-built colour board for the ZX81 should be regarded as the ultimate achievement.

Rather, it is that things have possibly now swung too far in praise of commercialism.

The business is now ruled by The Big Licencing Agreement — Danger Mouse, The *Magic Roundabout*, Eddie Kidd, *Ghostbusters*, Daley Thompson.

The actual quality of the program itself is now almost irrelevant with the magnitude of the *deal* being of paramount importance. And that is to be regretted.

Somewhere in the transition from hobby to big business — in the chaotic surge of the industry — the priorities have got a little mixed up.

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How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles and any accompanying programs should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish although we will always try our best to make sure programs work.

Computer Trade Association Magazine of the Year

MSX

Continued from page 1

'professional' quality keyboard), £299, available October (also available in October the Sony HBD-50 360K capacity 3½inch disc drive), Toshiba, HX-10, 64K, £279.95, available end September (also a printer/plotter, £249.95, and a dot-matrix printer, £349.95, both available in October)

Commenting on the MSX system, Chris McLaughlin for the MSX companies commented, "We may either love MSX or hate it as a standard but it's a final solution to the problem of compatibility — achieved by consensus within the majority.

"Nobody is standing up and saying that the Z80 is knife-edge state of the art stuff. It's not necessarily the best — but it's workable — and we can build applications such as home banking and home shopping around it.

"The pricing side was never discussed by the MSX companies together but originally they were hoping to produce them at around £250 — but the way the yen has been going against the pound has meant the cost has had to go up."

Over fifty UK software houses are now committed to supporting MSX. They include Alligata, Andromeda, Artic Bug-Byte, DK'Tronics, Hewson, Hi-soft, Llamasoft, Mastertronic, Micromega, Ocean, PSS, Quicksilva, Terminal and Virgin.

None of the MSX companies exhibited at last week's Personal Computer World Show. An MSX spokesman explained that MSX is intended as the world's first family computer standard and the seven electronics giants wished to remain apart from the 'hobbyist' end of the industry.

● Casio, Brother and Sharp all now have gained MSX licences and Casio has released an MSX computer in Japan.

Sinclair

Continued from page 1

games' may eventually appear under the Sinclair label.

It is thought that Sinclair is in negotiations to buy *Bandersnatch* from Imagine's receivers, although neither Chris Chambers, the receiver, nor Sinclair were prepared to comment on the possibility

New year machines

ATARI US has announced that it will release new 16 and 32-bit machines early next year.

The 16-bit machine, Atari Corporation president Sam Tramiel said in an interview in Taiwan, will be launched in January 1985, and be non-IBM compatible. He claimed the machine had already been designed by Atari engineers.

The 32-bit micro will be a development from that computer, and be introduced next April.

Sam Tramiel—son of Atari chairman Jack Tramiel—said it would cost less than $1,000 (around £800–£850). If true the machine could start another computer price-cutting war in the US. IBM's and Apple's nearest competitors both cost over $2,000.

Atari has set a production target for 1985 for these machines of between three and five million at sites in Ireland and the Far East.

Ghosting for Activision

GHOSTBUSTERS, the hit US movie, will be available in the UK as a computer game before the film is released here.

Activision has acquired rights from Columbia Pictures to develop software based on the film, the theme music of which is currently riding high in the British top ten.

"Our game version will be on sale by mid-November while the movie goes on release in December," said Activision's UK managing director, Geoff Heath. "It features both characters and music from the film, and will be a mix of arcade and strategy action."

Ghostbusters (the game) has been designed by David Crane, who also designed *Pitfall, Pitfall II* and *Decathlon*. It will be simultaneously released for the Atari VCS, Commodore 64 (£10.99), Spectrum (£9.99) and MSX (£11.99) machines.

Top team for Beyond

BEYOND Software has signed up a top programming team to develop a graphic adventure for Beyond.

The team of six programmers—calling itself Denton Designs—includes Ian Weatherburn and John Gibson, both of whom were previously with Imagine Software working on its *Bandersnatch* 'mega-game'.

"The graphic adventure has a working title of *Shadow Squad*, and will be ready in the New Year," said Terry Pratt of Beyond. "The player controls six screen characters, each with individual weaknesses and strengths, sent to a 'Deathstar'-type place on a diplomatic mission."

The adventure uses English text commands, with different graphics for each screen. The player must co-ordinate all six characters to complete the mission.

The game will be released for both the Spectrum and Commodore, priced between £8 and £10.00

Stratos-jamais!

ORIC has now said that there is no possibility of its new machine—a successor to the Atmos, based around the 6502 processor—being launched this year.

An Oric spokesman said, "It was originally our plan to launch the micro in France before the end of 1984, but there is now no question of it appearing this year. Oric are, however, currently working on a number of new products."

The machine had a working title of 'Stratos'—this will now not be used as another computer company also has a product with this name.

Disc unit for the CPC 64

AMSTRAD has announced its DDI 1 disc unit and interface for the CPC464 micro.

The drive is based on the 3inch Hitachi standard and is a 169K 40-track double sided double-density disc system.

The disc operating system is either AMSDOS — an extension to locomotive Basic with simple filing commands, or the Digital Research standard CP/M. The system is also file compatible with the single-sided format used by CP/M on the IBM PC.

The CP/M disc is bundled free with the Amstrad disc system. As well as the CP/M disc each drive is bundled with *Dr Logo* on disc, the Digital Research version of *Logo*.

The drive, plus interface, CP/M and *Dr Logo* is priced at £199.95. The system can also support a second disc drive for which an additional interface is not required. The additional disc unit is priced at £159.95

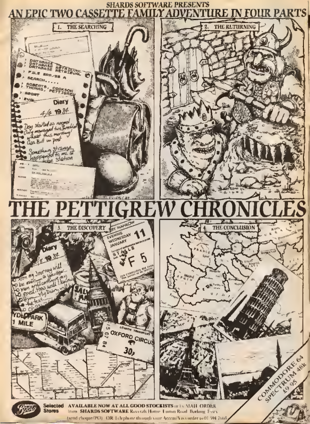
Sabre Wulf follow up

TWO follow ups to Ultimate's highly successful *Sabre Wulf* are to be released shortly.

Underwurlde and *Knight Lore* both continue the adventures of the Sabreman.

Underwurlde is an arcade-style game in which the Sabreman must do battle against the inhabitants of the Underwurlde in over one hundred screens. *Knight Lore* is, according to Ultimate, "the first step to a new generation of computer adventure simulation developments".

Underwurlde and *Knight Lore*, both for the 48K Spectrum, will cost £9.95 each.


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Letters

Commodore compatibility

Now that production of the Vic 20 seems likely to cease, what will us Vic owners do for software? The C16 has a 16K memory, but are there any plans to make its software compatible with the Vic? If not, will Vic software still be available in the shops?

Jason Watts
13 Winifred Avenue
Hornchurch
Essex

C16 software is not compatible with the Vic20 but Commodore says that it will continue to provide software support for the Vic20

All change in Superbasic

To alter Alan Turnbull's program *QL Rom* (September 20 issue) for use on the latest Superbasic version JM, change the table address in Lines 190 and 230 to 26724 and 27400, respectively.

Thanks to Alan for this useful little program.

Jonathan Treadgold
11 Bellhouse Walk
Rockwell Park
Bristol
BS11 OUE

From the arcades

I am writing to complain about your review of *Gilligan's Gold* for the Commodore 64. It appears to me that the reviewer has never been into an arcade. If he had, it may have come to his attention that the game is in fact a copy of *Le Bagnard*, a game which has had some success in the arcades.

I would also like to point out that not every game involving moving a player round a screen and climbing ladders is a rip-off of *Manic Miner*. In fact, *Manic Miner* was not the first game of its sort. *Miner 2049'er* for the Atari came out long before *Manic Miner* and is very similar to it. *Miner 2049'er* may have been the game that spurred the programming of *Manic Miner*.

Guy Norton
The Wellyards
Old Road
Weston
Staffs

It is up to the reviewers whether they choose to judge a game entirely on its own merits, or to draw comparisons with other titles.

Better late then punctual?

Both the more recent Sinclair computers were plagued with late arrival dates and broken promises and, consequently, attracted masses of publicity which certainly does not seem to have done any harm to their popularity.

Amstrad, however, arrived on time as a complete package and only seems to have attracted the requisite reviews.

Does this mean that computers have now gravitated to the level of film stars where any publicity is good for the image?

G Phillipson
GP Computer Services
14 Newton Court
Outwood, Wakefield
W Yorks

Microdrive conversion

Re the *Peek & Poke* query in the September 13 issue entitled 'Copy on to Cartridge'.

It *is* possible to copy *Vu-File*, *Vu-Calc*, and even *Scrabble* to microdrive. R M Jones should write to Draysoft, 2 Bedford Way, Rugeley Staffs WS15 1LB, which supplies excellent conversion programs for the above (I know as I've used all three successfully).

R M Jones could also try the Kopykat microdrive conversion program—but it will *not* work on *Pinball*.

Brian Holden
London

Query answered

I sympathise with John Lawlor (Vol 3, No 35) and Brian Johnson (Vol 3, No 37) with their QL problems. In my experience, Sinclair rarely answer queries. However my *Ver $* is also AH Rom and maybe I can throw some light on *Dline*, *Merge* and the user procedure utility program. Firstly, *Dline* type with no space after *D* but space after *E* then Line Number. Example, *Dline* space line number Enter. This removes the line but easier still and less typing is to type only the line number then press *Enter* and hey presto, disappeared, you don't need to type *Dline*.

The user procedure utility program has problems on lines 30315 and 30360 — just edit the word *Merge* on both lines and replace with *Load*. This makes all the functions work correctly.

Now to *Merge*. On the QL it does work but it's not very well explained in the manual. If we start with an example, type 10 PRINT "OWN NAME" press *Enter* then type SAVE MDV1_NAME. Now type 20 PRINT "AND WIFES NAME", press *Enter* then type *Merge* MDV1_NAME and press *Enter*. Now type *Run* and on the screen you will see "OWN NAME AND WIFES NAME." You can only merge a program already in memory with one on a microdrive. You cannot merge a program on MDV1 and one on MDV2 without loading one to memory first.

Brian McNulty
14 Millfield Rd.
Bridlington
East Yorkshire

Special Tape Offer—Week 2

Only £1.50

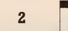
plus 25p post and packing

Nightmare Planet Adventure

on the Commodore 64

All you have to do to get your copy of the Nightmare Planet text adventure written by Mike Grace is to collect the three special coupons from the magazine printed last week, this week and next week and send them off, together with your name and address and a cheque or postal order for £1.75 (made payable to Sunshine Books) to. 'Nightmare Planet Offer', Popular Computing Weekly, 12–13 Little Newport Street, London WC2R 3LD.

Learn to Fly Competition—the final week's coupons are on Page 14.







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Star Game

Wall Of Doom

Can you build up your defences and prevent the aliens from getting through? Find out in Yves Suys' game for the Commodore 64

In *Wall of Doom* for the Commodore 64, you must build a brick wall to protect yourself from alien enemies. You have a time limit of just two minutes to complete the wall before death is inevitable

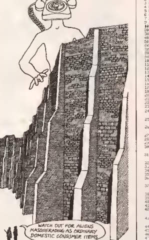
The listing should be easy to follow and understand, with plenty of Rem statements.

Program notes

50	sets up the sound
160-200	sets up the graphics
470-580	prints the instructions

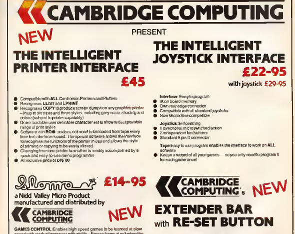
Variables

HF	high frequency
LF	low frequency
DR	decay release
VI	lives
SC	score
HISC	high score
TI$	time
F	X sprite 1
C	Y sprite 1
L	X sprite 2
M	Y sprite 2
H	X sprite 0
K	Y sprite 0
D$	hours
6$	minutes
D$	seconds




```
1 REM********************
2 REM* AUTHOR  Y. SUYS *
3 REM*  FROM WEMMEL    *
4 REM*   (BELGIUM)     *
5 REM* JANUARY  1984   *
6 REM********************
7 HISC=0
9 POKE650 128
10 GOTO400
20 REM**************************
30 REM* SOUND S INITIALISATION *
40 REM**************************
50 S=54272 FORC=STOS+24 POKEL 0 NEXT
60 POKES+5,9 POKES+6 0 POKES+24,15
70 READHF LF DR
80 IFHF<0THENRETURN
90 POKES+1,HF POKES LF POKES+4,33 FORT=1TODR NEXT
100 POKES+4,32 FORT=1TO50 NEXT
110 GOTO70
120 V=53248 POKEV+21 7
130 REM****************************
140 REM* SPRITES  INITIALISATION *
150 REM****************************
160 FORA=12288TO12350 READX POKEA,X NEXT
170 FORB=12352TO12414 READY POKEB Y NEXT
180 FORC=12416TO12478 READZ POKEC,Z NEXT
200 POKE2040 192 POKE2041,193 POKE2042 194 RETURN
210 REM***************
220 REM* SOUND DATA *
230 REM***************
240 DATA25 177,250,28,214,250 25,177,250,25,177,
    250 25 177,125,28,214,125
250 DATA32 94,250,25 177 250 28 214 250,19,
    63,250,19,63,250 19 63,250
260 DATA21 154,63 24 63,63,25 177,250,24,63 125 19
    63 250 -1  1,-1
270 REM************
280 REM* SPRITE 1 *
290 REM************
300 DATA0 0 0 0,0 0,0 0 0 0 56,0,0 126 0 0 126,0,24
    215,24 60,195 60
310 DATA60 195 60 63 231,252 27,231,216,24,195 24,24,
    255 24 0,255,0,0,120,0
320 DATA0 56,0 0 24 0 0 24 0 0,24,0,0,0,0,0,0,0,0
330 REM************
340 REM* SPRITE 2 *
350 REM************
360 DATA0 24 0 0 126 0 0 255,0,0,153,0,0 255,0 0,
    66,0 0 126,0 0,24 0,0 255,0
370 DATA7,255,224,14 255 112 14 255 112,28,255 56
    28,255,56,0,231,0,0 231,0
380 DATA0 231 0 0 231 0 0,231,0 3,231,192,0,0,0
390 REM************
400 REM* SPRITE 3 *
410 REM************
420 DATA0 0,0 0,0 0 0 0 0,0 0 0,0 0 0,0 0 0 0,0 0 0
    0 0,0 0 0 0,0,0,0,0,0,0,0,0
430 DATA255 255 255 255 255,255,255 255 255,255,255
    255 255 255,255 255,255 255
440 DATA255 255 255 255 255 255 255 255,255
450 REM***************
460 REM* INSTRUCTIONS *
470 REM***************
```

```
475 PRINT"□"
480 POKE53280,11 POKE53281,15
484 PRINT"□
490 PRINTTAB 26 THE WALL
500 PRINT THE OBJECTIVE IS TO BUILD
510 PRINT A WALL OF BRICKS
520 PRINT WITHOUT BEING KILLED
530 PRINT BY THE AWFUL ALIENS
540 PRINT PUT THE FIRST BRICK ON
550 PRINT THE ARROW, AND THEN
560 PRINT THE LAST ARROW
561 REM**************************
562 REM* READING OF THE SOUNDS DAT. *
563 REM**************************
565 PRINT YOU HAVE A TIME OF TWO MINUTES"
566 PRINT TO PUT ONE BRICK!
570 GOSUB
571 REM**************************
572 REM* READING OF THE SPRITES DAT. *
573 REM**************************
580 GOSUB100
590 FORP=1TO1000 NEXT
600 PRINT"□
610 PRINT" POINTS BOARD
630 PRINT" A PUT BRICK = 100 PTS
640 PRINT" A BUILT WALL =1000 PTS"
650 PRINT
660 FORY=0TO39 PRINT "-" NEXT
670 PRINT
690 PRINT" A TO ASCEND
690 PRINT" Z TO DESCEND
700 PRINT N TO GO LEFT
710 PRINT M TO GO RIGHT"
730 RESTORE
740 GOSUB850
750 FORP=1TO1000 NEXT
760 GOSUB130
770 VI=3 J=0 TI$="000000"
780 REM**************************
790 REM* START OF THE GAME *
800 REM**************************
810 POKE53280 POKE53281 15
812 POKE 243
820 F=INT(RND(1)*50)+24 G=100
821 IFF 255THEN820
830 PRINT "□"
840 ****************************************
841 * INITIALISATION OF THE VARIABLES *
842 ****************************************
850 POKE2040 POKE2041 193 POKE2042,194
860 SI=0
870 L=INT(RND(1)*255)+24
871 TI$ "000000"
875 HI 1
880 IFL>255THEN870
890 M=INT(RND(1)*130)+40
900 IFM 255THEN890
910 V 53248 POKEV+4 L POKEV+5 M
940 
950 N=INT(RND(1)*255)+24
951 IFN 255THEN950
959 FORP=1TO30
960 PRINT "
965 D$ LEFT$ TI$ MID$(TI$ 3 2) RIGHT$(TI$ 2)
970 PRINT" LIFE VI
971 PRINT D$,
    " B$, C$ SEC"
980 FORF
981 PRINT "
982 IFU 2 AND 1 ANDFX 51+3ANDAI-10THEN1999
985 FOR 
986 IFU=1 THEN PRINT" NEXT
987 NEXT
990 POKEV+2 F POKEV+3
995 IFN 255THEN 255
1000 POKEV N POKEV+1,K
1002 POKEV+39 POKEV+40 POKEV+41,2
1010 K=K+8
1011 N=N+5
1012 IFN 255THENN=255
1015 V=53248 POKEV+4,L POKEV+5 M
1020 GETA$
1025 F=INT(F 8) G=INT(G 8)
1026 IFFU=1THEN G IF 3THENGH=0
1028 HI HI+
1030 IFA$ "A" THENG G=-4
1040 IFA$="Z"THENG=G+4
1050 IFA$ "N" THENF=F-4
1060 IFA$ "M"THENF=F+4
1067 IFF H -1ANDF H +1ANDG L -1ANDG K
     THENSC=SC+50 GOTO870
1070 IFG 230THENG=230
1080 IFG 50THENG=50
1090 IFF>255THENF=255
1100 IFF 0THENF=0
1105 POKEV+2 F POKEV+3 G
1106 IFF LANDF L+2 ANDG>MANDG<M+24THENL=FANDM=G AI=10
1110 IF =240THENF=0
1111 IF =240THENN=INT(RND(1)*255)+24
1112 IFN 300THENN=300
1113 IFTI$ "000200"THEN4000
1114 IF =240THEN950
1116 IFN =F 9ANDN =F+9ANDK =G-6 ANDK =G+6THEN3000
1120 NEXTP
1130 GOTO950
1200 REM**************************
1300 REM* PROGRAM FOR A PUT BRICK *
1400 REM**************************
1999 SI=SI+4
2000 PRINT "
2001 FORU=1TO19 PRINT NEXT
2002 FORU=1TO81 PRINT NEXT
2005 SC=SC+100
2006 IFSI=24THENPRINT "□" FORU=1TO19 PRINT FORO=1TO38
     PRINT" ", NEXT NEXT U=0
2007 IFSI=24THEN +1000 GOTO860
2008 GOTO870
3000 REM*************
3001 REM* COLLISION *
3002 REM*************
3010 =54296 H 54 6 A 54277 N=54273 L=54272
3011 POKE54276 0 POKE54277 0 POKE54272 0
     POKE54296 0 POKE54273,0
3015 FORW1=150TO0STEP-6
3020 FORX=15TO0STEP 1 POKEV POKEW 129 POKEA
     15 POKEN,40 POKEL 200 POKEA+1,1
3025 NEXT
3026 NEXTW1
3030 POKEW,0 POKEA,0
3040 VI=VI-1 RESTORE GOSUB850
3045 IFVI<=0THENGOTO5000
3050 GOTO870
3650 REM**************************
3900 REM* OVERFLOW OF THE TIME *
3950 REM**************************
4000 VI=VI-1 RESTORE GOSUB850
4010 TI$="000000"
4020 IFTI$ =0THEN5000
4030 GOTO870
4400 REM**************************
4500 REM* END OF THE PROGRAM *
4600 REM**************************
5000 POKEV+21,0
5001 FORF=1TO16 POKE53280,F FORK=1TO2700 NEXT
     NEXT POKE53280 246
5002 PRINT" YOUR SCORE IS "
5003 PRINT" SC " PTS."
5004 IFSC HI THENPRINT" YOU VE DONE THE HIGH
     SCORE WELL DONE!!" GOTO5010
5005 PRINT" THE HI-SCORE IS " ",HISC, " ","PTS"
5007 PRINT " COURAGE!!!!!."
5010 FORI6=1TO1000 NEXT
5020 PRINT "□"
5030 PRINT"WOULD YOU LIKE ANOTHER PLAY (Y-N) ?"
5040 GETS$
5050 IFS$="N"THENEND
5060 IFS$="Y"THEN5100
5070 GOTO5040
5100 PRINTPRINT"WOULD YOU LIKE READ
     THE INSTRUCTIONS (Y-N) ?"
5200 GETG$
5210 IFG$=""THEN5210
5220 IFG$="Y"THENPRINT"□" GOTO1
5230 IFG$="N"THENGOTO700
5240 GOTO5210
5250 END
```


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Olympia mania

Christine Erskine *finds out what's new at the Personal Computer World Show.*

The seventh Personal Computer World Show opened its doors on September 19th at its new Olympia venue. Though the show was a little smaller than last year it is nicely timed for the autumn launches, and it is still the show that no-one *quite* dares to miss.

All the established hardware manufacturers were there—Sinclair, Commodore, Amstrad, Acorn, Act and even Enterprise, which must count as established by now despite still not having a product in the shops.

The Enterprise 64K computer was on display, though the promised software and peripherals (joystick and monitor) were hardly in abundance. The Enterprise is now priced at £249.00. At its last launch in March, it was intended to be £228.85.

The highlight of the show as far as new machines were concerned was surely the unveiling of the Acorn Business Computer range.

Still no price details available for the computers, but they range from the Terminal, intended as a machine to give Econet access and a terminal emulator, through the Personal Assistant, with *View* word processor bundled, to the ABC 310, with an 80286 main processor and up to 1 megabyte memory.

Commodore was showing its C16 and the Plus/4, the latter in a low-key way, and Sinclair were selling QLs from the stand. Sales could well have been enhanced by the sight of Psion's *3D Chess* program running on the machine, a sophisticated chess simulation which won the World Microcomputer Chess Championship two weeks ago.

Sinclair was also showing a £199 dedicated QL monitor, the Sinclair *Vision*, manufactured by MBM Data efficiency.

Commodore's new networking system, Compunet, was also much in evidence, and Century Communications announced that it would be putting Essex University's Multi-User Dungeon (MUD) on to Compunet. From October 1. Commodore also showed a primitive music keyboard add-on which clipped onto the C64 and acted directly on to the computer's keys.

Conspicuous by their absence were the MSX companies, which, with one exception, did not exhibit, for reasons best known to themselves. Those people who wanted to see MSX machines could find them by discovering which software houses were launching MSX programs—of which more later. Toshiba's HX 10 and the Sony Hit-Bit were both on show demonstrating MSX software.

The one MSX exception was AVT Goldstar's machine, being displayed and demonstrated by its distributors, Micro Dealer UK.

Amstrad's eagerly awaited 3inch Hitachi standard disc drive and interface (see page 6) was shown, if only partly, since most of it was buried in the back of the stand—"We've had to take some precautions—people do walk off with things from shows," explained Amsoft's Bill Poel.

The disc drive will enable users to run CP/M, Digital Research's Dr. Logo is also bundled with it costing £199.00, it should be available in November.

Whatever Atari UK do bring out under the guidance of new chairman Jack Tramiel, it won't be for the Christmas. Nothing new was shown on the stand, which publicised heavily the recent price cuts for both software (games now £9.99) and hardware (800XL is now £199.99).

Together for the first time—Hermann Hauser of Acorn (left) and Sinclair's Nigel Searle.

Most of the larger hardware companies were exhibiting on the ground floor, but up on Level One—which was devoted to business systems—Act's micros made strong display. The F1, F1e, and Portable all made their first public appearances alongside Apricot's more established machines.

Three hardware manufacturers were to be found on the second floor, where most of the home software companies had stands. Memotech had their machines on display—the 32K MTX500 is now £199.00 and the 64K MTX512 £275.00. A wide range of peripherals were also on view.

Oric's stand was notable for its vastness. The Atmos, disc drive, printer and modem were all shown. The last named however, was not plugged in, and interested visitors to the stand had to be content with gazing at the little black box.

Touchmaster, the company made up of ex-Dragon Data employees and based at its South Wales site, were there in force, showing the Touchmaster graphics tablet, and a variety of graphics tablet programs in the form of overlays for the keypads including early-learning titles and versions of board games such as *Draughts* and *Othello*. The Touchmaster keypad costs £149.00 and the 'Touchware' £9.99 each. The Touchmaster can interface with the Commodore 64, Vic 20, Dragon, Spectrum and BBC machines.

Rotronics' Spectrum Wafadrive was also being demonstrated, and Audiogenic showed for the first time a similar device for the Commodore 64. At £79.95, or £100 with Audiogenic's *Swift*, *Wordcraft* and *Magpie* packages bundled, the drive, manufactured in Canada, plugs into the Commodore's cassette port. The price undercuts Rotronics' forthcoming Commodore version by some £60.

Apart from its microcomputer, the BBC also had a heavy presence with *The Chip Shop*. Recordings for broadcast on the Radio 4 show were heard on the first three days of the show.

The first day had Paul Bailey (Digital Research) Roger Foster (Act) Hermann Hauser (Acorn) and Nigel Searle (Sinclair) cheerfully tackling audience questions and light-heartedly parrying with each other.

All for were happy to agree that the MSX standard was very much a Lowest Common Denominator in the micro world—well they would, wouldn't they?—but were far more guarded when asked their opinions of the new Acorn business micros. Hermann Hauser was excused from answering this question.

Paul Bailey was openly appreciative and said they were 'very exciting'—Roger Foster felt that 'Acorn will have as much difficulty breaking into the business market as Act would in the home market." It was left to Nigel Searle to openly admit any rivalry and he said, 'I wish Acorn luck with them, but I won't say if that's good or bad luck.'

The new software was mainly to be found on the second floor, and on emerging at the top of the stairs, it was impossible not to realise that *someone* had acquired the licence to market *Ghostbusters* as a computers game. On following the sound of the film's theme music, it turned out to be. Strangely, it was a first meeting for any of the participants.

continued over the page ▶

Learn to Fly Competition: Week 4

FLIGHT SIMULATOR. To win a chance to try your hand on a real flight simulator — as used by British Airways to train commercial pilots — all you have to do is send off this 'plane' coupon No 4, together with the three coupons from the three previous issues of *PCW* and complete the form below. Send the whole lot off to 'Flight Competition', Popular Computing Weekly, 12-13 Little Newport Street, London WC2R 3LD.

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4

HEWSON CONSULTANTS discount flight simulation and air traffic control software. To buy the special offer software at exclusive *Popular Computing Weekly* prices all you have to do is send off the Number 4 coupon below together with the three similar voucher from the previous three issues of *PCW*. Also enclose the completed panel on the left and a cheque or PO made payable to Hewson Consultants for the appropriate amount. Don't forget to tick which item of software you want and also write your name and address on *both* forms — they will be used to send your goods to you so please write legibly. You may only claim one discount software title per set of four vouchers. The offer is only open to residents of the UK and Eire and the offer closes on October 31. Please allow 28 days for delivery.

Program	RRP	PCW price	Tick box
Nightflite II	£7.95	£5.60	☐
Heathrow Air Traffic Control	£7.95	£5.60	☐
Heathrow Air Traffic Control	£7.95	£5.90	☐
Dragonfly II	£6.95	£4.75	☐
Electron	£7.95	£5.60	☐

Name ....
Address ....
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Name ....
Address ....
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4

Show report

continued from page 13

Activision (see page 5) who played the song relentlessly throughout the show. One representative on the stand was moved to remark that here was one record she'd be quite happy never to hear again.

MSX games were demonstrated by, among others Hudsonsoft, who came to the show all the way from Japan. It had 14 such titles on show, including *Stop the Express*, which has already had some success on the Spectrum. The title was also shown on the C64. Most of its other MSX titles were conventional arcade action but there was also a *Mah-jong* simulation.

Thorn EMI showed a range of licensed MSX titles, including *Ant Attack*, *Boogaboo*, and *Games Designer* (Quicksilva) *Hustler* (Bubble Bus) and *Les Flics* (PSS). Prices for the range vary, but are between £6 and £8.

A large crowd was continually present at Llamasoft's stand, where Minter was demonstrating *Ancipital* (£7.50), his latest woolly quadruped. This one is a satyr-like creature, half-human, half-goat, trapped in a maze. To get out, the creature must find and collect five key camels and five goats of Power. Wot, no llamas?

New Generation announced its sequel to the highly acclaimed *Trashman—Travels with Trashman* and an intriguing looking game, *Cliffhanger*, set in the badlands of Arizona, and featuring permutations on that

Travels with Trashman

time-honoured theme of rolling a boulder off a cliff on to someone's head.

Cliffhanger is for Commodore 64 at £7.95, *Travels with Trashmen* £5.95 for the Spectrum.

Beyond software had a batch of new releases on show, including the *Lords of Midnight* sequel, *Doomdark's Revenge* and *Ankh*, a fiendishly difficult looking game for the Commodore 64.

Mirrorsoft's menu-driven *Games Creator* for the Commodore 64 shouldn't provide any problems with difficulty. Anyone who can twiddle a joystick can begin developing aliens, heroes and maze configurations to play a variety of arcade-type games. Three different games are included in the package, which you can alter and modify to your heart's content.

Snooker player Steve Davis was the main attraction at the CDS stand, or at least, the game bearing his name was. *Steve Davis Snooker* gives you the facility to control spin and speed on your shots. The program is to be launched next month on the Commodore 64, Spectrum and Amstrad, with versions for MSX, BBC and Electron to follow.

Level 9 had a couple of new adventures, *Return to Eden* and *The Saga of Erik the Viking*, the last an adaptation from Monty Python's Terry Jones's book. As Erik, you must rescue your family from evil dog fighters in a graphic adventure. *Return to Eden* is the follow-up to the very successful *Snowball*, also an adventure with graphics. *Erik* and *Return to Eden* will cost £9.95. The latter will be available for Amstrad, Commodore 64, BBC, Spectrum, Memotech, Oric 1 Lynx and Atari, while *Erik* will be released on BBC, C64 and Spectrum, with an Amstrad version to follow.

Another licensed program, *The Magic Roundabout* was being shown for the first time at CRL's (now CRL Group plc) stand. Billed as non-violent, the scenario involves Dougal (the yellow blob) trying to build a house of sugar cubes, thwarted by the other Magic Garden characters. £5.95 for the Spectrum.

If these were the highlights of the Show, then what of the low points?

Microvitec deserves a fairly hefty rebuke from the RSPCA for promoting its cub colour display monitors by having three live tiger cubs caged at their stand. Don't try and tell me they enjoyed the show.



Reviews

Spreadsheet

Program *Mini Office* **Price** £5.95 **Micro** BBC B **Supplier** Database Publications, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY

The facilities provided in *Mini Office* cover all the standard business applications — word processor, database, spreadsheet and graphics programs. It seems sound to offer these as one package, and as such it provides a complete introduction to a business system.

However, anyone intending to make serious use of a business system would be well advised to study the market carefully and look at the facilities offered by each package before buying. This one would provide an excellent introduction to each kind of program, but could prove frustrating after a while because of its limitations. For example, the word processor does not allow for 'search and replace', the database is a flat file of maximum 156 records.

In short I would prefer to save up for a more powerful version of each program. However, it represents good value for money if its limitations can be accepted.

Jan Watterson

```
ESCAPE..Always returns to this page.
f0......Large letter editing mode.
f1......Normal letter editing mode.
f2......Typing speed in words/minute.
f3......Print text file.
f4......Copy on/off.
f5......Set tab key.
f6......Save text file.
f7......Load text file.
f8......Clear text file.
f9......Page end marker.
```

Traditional

Program *Eye of Bain* **Micro** Spectrum 48K **Price** £5.95 **Supplier** Artic Computing Ltd, Main Street, Brandesburton, Driffield YO25 8RL

Tarl, the warrior, hes chained to a pole in a grass hut, has mission to find the priceless Eye of Bain cruelly interrupted by savage Alvamans. If only he could escape he could continue, but...

Actually it took this reviewer rather a long time to solve this first puzzle but eventually with one verb/noun, he was free to roam through this, Artic's Adventure 'F'. Fans of its predecessors will not be disappoited. There are many locations spread around the native village, from tall trees with apes to deep wells with shapeless black beasts. To advance, or even survive, calls for careful planning.

Author Simon Wadsworth has discarded 'Help' and 'Score' routines, but a useful system of capitals indicates which nouns are recognised.

Eye of Bain also illustrates its locations, and though this does not add materially, the pictures are nicely executed. Thankfully they only appear when called up, so do not slow down the fast responses to the text commands. In short this program makes no great innovations, but should please anybody looking for a traditional adventure.

John Minson

Addressed

Program *Random Access Mailing* **Micro** BBC B **Price** £34.99 **Supplier** Micro-Aid, 25 Fore Street, Praze, Cornwall.

Random Access Mailing from Micro-Aid is a flexible address filing system, its two main functions being the provision of label printing and letterhead addressing routines.

The main options offered by the menu-driven program consist of data entry, deletion and alteration, list data, label and letterhead printing; and data search and sort routines.

The data record consists of a name and address, telephone number, personal contact and record code option, this latter can be used to define a record as business or personal and can include codes to facilitate selective printing of labels etc. Searches and sorts may be performed using the address, telephone number code or contact name.

Thus, the program offers a considerable level of flexibility and control and is aimed therefore at those concerned with, for example, distribution of circulars, market researchers, mail-order operators etc — as well as the general office user.

Night Sky

Program *Star Watcher* **Micro** Spectrum 48K **Price** £15.00 **Supplier** Brainpower, Triptych Publishing Limited, Starling House, Station Road, Gerrards Cross, Bucks.

Application through learning is the philosophy of Brainpower, and this lavish package contains two cassettes, or one microdrive cartridge, devoted to educating and aiding the amateur astronomer.

Both programs are menu driven, with displays centred on a broad window in which the stars appear as single or multi-pixel dots. The education section concentrats on constellation recognition, building up each from its key stars to a full sky picture. A test facility is provided.

The more experienced user can call up a celestial display for any place, at any time, with the application program. This can also simulate a planetarium, moving the heavens by step. A 84 page manual, sensibly designed to stand vertically by the screen, completes the pack. It is written for the beginner and explains the technicalities with admirable clarity.

Sadly, *Star Watcher* seems to have some surprising blemishes. Most entries have a Yes/No double check, but not the 'Exit Program' routine — where it is needed most. More important are discrepancies between the manual and program, including reference to a Teaching Module which is, apparently, not on the tape. If Triptych corrected these few faults they would have a versatile educational tool in which the contents, for once, matched the packaging quality.

John Minson

club secretaries, schools and so on.

It was with some sense of disappointment, therefore, that when running the program I viewed an almost immediate error message "Syntax error at Line 17010". Well, the origin of this was identified, and a point to mention is that if you possess a system operating Basic I as opposed to the more recent version, you will have to alter the program *MAILmd*. The modification is minor, changing the semi-colon following the *Inputtab* statement in Line 17010 to a comma (the Basic I equivalent) does the trick, then re-saving this *MAILmd* or typing *Goto* 10 in command mode should allow you to proceed.

The data entry routine took some getting used to, a rather constrained format is required to permit the program its level of complexity in the selective search, sort and print routines. The size of the data base is dependent upon the disc system available, 628, 1200, 020 and 1785 records on 40 track single density, 80 track single density, 40 track double density and 80 track double density units, respectively.

In its label printing operation the program provides a very flexible system for configuring label printing to meet the individual's requirements and the formats of various printers. To print letterhead addresses the program is written in such a manner as to allow the address to be added to text-files created using *Wordwise* in addition to standard blank paper headings. The program will in this option insert the address, date and name (defined as the personal contact) into the text where appropriate.

One peculiarity I found was that when printing an address, the personal contact name, if included in a record, was printed above the address. If the address record also included a name this gave rise to a double name preceding the address. Finally, the personal contact name is limited to twelve characters. Thus if you include a title and initial you are likely to get a severely truncated surname appearing.

Simon Wilson

High dive

Program *Summer Games* **Micro** Commodore 64 **Price** £19.95 (disc) £14.95 (two cassettes) **Supplier** Quicksilva, Palmerston Park House, 13 Palmerston Road, Southampton, Hants.

Summer Games is another *Track and Field* variant in which you get to play every kind of sporting star known to mankind (the crowd only applauds if you are American though).

There can be little doubt though that despite the large number of similar titles this one is far and away the best.

It was written for the Commodore by the US house Epyx and is being marketed in this country by Quicksilva. The success of the game comes from its spectacular graphics. Unlike some of the other variants, this one introduces sports like high diving and gymnastics which require something other than the usual yanking of the joystick.

There are various permutations of play available with up to eight players including the computer taking part if you wish. You can practise individual events and, if appropriate and you have a disc, record your world record score.

There is even an opening ceremony in which a runner arrives to light the Olympic flame and white doves of peace are released — no sign of Ronald Reagan or a jetman though.

Ian Waltham

Psychedelic

Program *Sinbad* **Price** £7.95 **Micro** BBC B **Supplier** Virgin Games Ltd, Vernon Yard, 119 Portobello Road, London W11

Quite what Sinbad and a cast of magic carpets are doing in space I cannot imagine, but there they are, and the scenario makes for an original game by Dennis Ibbotson. According to the cassette cover, he has only been programming for six months and hates computer magazines (whoops!)

It contains two different screens which alternate and become progressively harder during the game. The first has a number of furry rugs flying around the screen, and Sinbad has to climb on to his magic carpet and touch them as he flies past. A touch changes their colour, although they are still able to knock Sinbad off the carpet, and frequently do so. The aim is to touch them all in as short a time as possible.

When Sinbad has completed his psychedelic experience the second screen appears — a 3D view of Sinbad flying through meteors. Sinbad's instant dyeing technique evidently doesn't extend to meteors, so he must avoid colliding with them. The length of time it took to clear the first screen determines how long the flight through the meteors will last.

The cover also promises a surprise reward at the end of the game, but that would be telling. The game is pleasant but unexciting.

Jan Watterson

Glued-on

Program *Poster Paster* **Micro** Commodore 64 **Price** £6.95 **Supplier** Task Set, 13 High Street, Bridlington, Yorks

Despite having a hero named Bill Stickers — a bad enough pun to be truly offensive — Task Set's new game *Poster Paster* is pretty good.

The simple idea is to move a ladder about, collect glue, and put up posters avoiding a variety of completely unrelated but entertaining monsters. What makes the game is the realistic way the poster sections unfold to display various ludicrous adverts.

Beyond dodging monsters and positioning ladders there isn't much else to the game and it might get tedious after a while.

Ian Waltham

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The ABC trial

***Jeff Naylor** previews Acorn's new ABC range of business computers*

Acorn's entry into the business machine market—the Acorn Business Computer (ABC)—launched at last week's Personal Computer World Show understandably attracted a great deal of attention.

Seven machines and a terminal-type model were demonstrated, all broadly based around the BBC-with-second-processor technology. At the bottom of the range the machines are provided with a Z80 second processor running CP/M. Other options use the 16032 running Xenix and the 80286 giving the ABC IBM PC compatability.

So far, though, it is impossible to form a firm opinion about the ABC machines since Acorn is playing things close to its chest and has announced no details whatsoever of prices for the new range.

All the ABC models are based around the original BBC design (or Proton as it was called until the lucrative contract appeared). The machines come in two boxes, a main unit containing the discs, monitor, power supply and virtually all the electronics, and a separate keyboard. Whichever type of display—black and white or colour—the casing of the main unit appears to be identical.

It is quite large: the Apricot F1 and Macintosh look like half-scale models in comparison. Mounted on a plinth to raise it a few inches, the whole unit is supposed to tilt and swivel but when this was attempted on the pre-production machines it was not as easy as it looked. The ABC is not a light machine and only responded to brute force.

The disc drives are mounted beneath the screen. A Winchester hard disc presents you with a blank panel, broken only by a couple of LEDs. The floppy drives have a very solid lever for locking the discs in place. Acorn have taken great trouble in selecting a manufacturing source for these drives, and the type finally settled on have "passed all the tests with flying colours", to quote one of the designers. They are made by Tasc, although nobody is supposed to know this.

The main circuit board for the ABC lies across the bottom of the case. The BBC circuit layout has been completely redesigned for the new series of machines, but the chips are the same: in terms of configuration, the ABC is a Model B BBC machine with Econet and disc interface. Compatibility was obviously the watch word of the design team. The new board has been designed to cope even with "dirty" programming tricks used by software authors on the BBC such as reconfiguring the display controller chip.

Where this compatibility may fail is with the disc operating system. It is no secret that the Acorn disc filing system is based around a controller chip that is now considered obsolete, even by its manufacturer. Consequently the ABC computer is equipped with a new disc system which is bound to be an improvement, but may just cause the odd problem.

There are six, as opposed to five, sideways Rom sockets and these are capable of taking the 16K Roms or Eproms used on the BBC. A quick modification allows them to accept 32K chips instead. The main, or mother, board is standard throughout the range, except that I was left with the impression that the 300 series machines may have some alterations. Whether this is to do with running Concurrent CP/M or for the operation of mouse and modem was not clear.

Green-screen display

Either side of the monitor chassis—inside the case—are two card holding frames: the second-processer boards and other additions are housed here. Space has also been left inside the case for the additional electromagnetic screening that is required by American interference regulations. This may limit the size of boards that third-party manufacturers can use. Cards for things such as Ram discs can be quite large so they may have to be plugged into the 1MHz bus and sulk around behind the machine.

The display section and power supply are housed in a pivoted frame: with the cover removed it may be hinged up to make servicing and modifications easy. In addition, the computer can actually continue to run in this position as no jumper leads need to be disconnected, so you will have the chance to give yourself all the electric shocks you want.

Getting into the machine to work on it is something that has been well thought out: an Acorn designer claimed that he can get into the machine in 15 seconds.

The monochrome machines have a 12-inch green-screen display that is both clear and steady. The colour tubes (12 inch again) are described as hi-resolution and high contrast: the pictures they produce can only be described as excellent. Returning to the outside of the case, there are both RGB and composite video sockets lurking around the back. The monochrome models produce colour signals, so I expect that their RGB outputs will be welcome to those who want colour but can't afford a hard disc as well. The video signals are not buffered, so plugging a second RGB monitor into a colour model may interfere with the built-in screen's circuitry. With the monochrome models the same may happen with the composite video output, but in both cases it would not require a very complex add-on to overcome the problem.

The backs of all the machines have the same collection of input and output sockets. Prominent is the 1 MHz bus expansion connector. With this you may add external devices, such as your own hard disc drive. Econet comes as standard, as do serial and parallel ports and an analogue socket. A tape socket indicates that a cassette interface is still provided, despite the fact that all the models are equipped with discs. This is not surprising, considering the origins of the design and compatibility aspirations with the Beeb computer, but please take note, Sinclair Research.

In addition there is a power switch and keyboard connector. This last item is a locking "D"-type socket, so the keyboard should never come adrift accidentally.

Running between the main unit and the keyboard is a curly, 18-way wire. Acorn were pleased to find that British Telecom used such an item, and put it to good use. The extension signals to the keyboard are buffered, but otherwise they follow the same format as the Beeb. The keyboard itself contains only a little electronics. The





unit is slim and stylish and much thought has gone into the layout. The function keys are in a row along the top, but have been grouped in three blocks. It was thought that finding the right key would be made easier if they were grouped with gaps between F2 and 3 and F6 and 7.

BBC users will not find the cursor keys where they would expect, as they are grouped top right of the main Qwerty layout. Further right is a key-pad that not only contains numbers but also Plus, Minus, Divide and Multiply as well as an extra, double-sized return key. The keyboard gave a decidedly professional impression, and you get the same unit whatever model you buy.

A program break

There is no break key visible, a good idea for a computer that may spend little of its working life having programs written and debugged on it. If you peek at the back of the keyboard, however, a hole is revealed that fingers will have difficulty penetrating: poking a pencil in here will cause a break of the program (not the pencil). There is another switch behind the keyboard which can be used to toggle the way the machine operates. You can switch the second processer in and out (if fitted) and all that entails; if the Tube LED is not lit then you are left with a standard machine—however much you paid for it.

Having looked at the hardware components, let's now turn to the various options available. At the very bottom of the range is a machine that isn't really an ABC, but a terminal. At present it even has a 14 inch screen. Of interest to potential network customers, it is the least up-gradable of the range. Next comes the Personal Assistant. If you are considering buying a BBC machine with disc drive for word processing then hang on until the price of this model is announced—I am told that they will be comparable, and with the Personal Assistant you are getting a much better product. It will be capable of running any BBC or Electron software (given that a disc filing problem does not emerge). In addition to a double-sided, double density disc drive capable of storing 670K, you also get *View*, Acorn's own word-processing package and *ViewSheet*, a spreadsheet. Both programs are in sideways Rom.

The other machines in the range can all be turned into this base model with the switch described earlier, although they will have better disc options and will not have the sideways Roms as standard.

The ABC 100 is the monochrome Z80 second-processor option with twin floppy drives (1480K total capacity). It uses the second-processer method as used on the Beeb, with the 6502 handling screen, keyboard, etc and the Z80 doing the clever stuff. The processers communicate via the same Tube interface as used on BBC. The ABC 110 is a 100 with a colour display and hard, 10 Mbyte, disc replacing one floppy. Both Z80 machines can handle CP/M and come with a full set of bundled software.

The ABC 200 series use the National Semiconductor 32016 chip as the second processer. This is an advanced chip-32 bits internally with 16-bit data and 24-bit address busses. The 200s are best described as technical work stations, as they support a wide range of languages including C and Pascal. Acorn hope to equip the colour and hard disc option, the ABC 210, with the Xenix operating system. The licences have yet to be obtained for some of the software.

Finally the 80286 second-processer of the ABC 300 and 310 models is compatible with the 8086 and 8088 CPUs used by the IBM PC and its various clones. Proudly described as "not a PC compatible machine, a PC eater", the 300s are the executive machines, with a Concurrent (ie, multi-tasking) operating system and a software user interface called the *Desk Top Manager*. The front end of the Apple Lisa and Macintosh are the obvious inspirations for the Desk Top Manager. Graphic representation of sheets of paper overlapping on a desk, a mouse pointing at icons, and pull-down menus.

Whichever of the popular operating systems you may already be using, the 300s should cope: they can read virtually any disc format, although this may require some programming skills. The price of the 300s is claimed to under-cut the cost of equivalent IBM pc systems at around £3,500.

Pull-down menus

Perhaps the most interesting of the ideas behind the ABC is the possibility of upgrading from the lower end of the range to a top end machine. It should also be possible to leave your old second processer in place when adding the next one up the range.

This would allow, for example, the CP/M Z80 option to remain in place when upgrading to the 200 specification.

The ABC range has been under development for about a year now and field trials began in May. The computers on display at the show were pre-production models, but production is due to start in November with deliveries in January.

Although Acorn has done a good deal of market research, it is not to late for dealer and public reaction to modify the final packages. It is the dealers who will have the most say in what ends up in the showrooms.

First impressions of the machines are favourable. It is not exactly an elegant machine, physically, but the power of twin processers cannot be dismissed. Until prices are known, though, it is difficult to compare the range with other products.


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Pocket programs

Hardware *Psion Organiser* **Price** £99.95 **Supplier** Psion 22 Dorset Square, London NW1 1YP.

Even with the gilt now rapidly wearing off the home computer gingerbread, there still appears, once in a longish while, a product which bears the stamp of an original and very bright idea. Into that category comes the first piece of hardware produced by software company Psion. After several weeks of using the Psion Organiser I'm no longer breathless with admiration, but I am still a fan.

This machine makes an ambitious advertising claim to be "the world's first practical pocket computer", a slogan brazen enough to make several other manufacturers, not least Casio and Epson, foam at the mouth. The claim stems from the fact that with the Organiser, unlike any of the others so far on the market, large amounts (up to 16K in each of two "drives" or cartridge slots) of non-volatile memory are available for addresses and other reference data, including information for use with special "program packs" which come together with Psion's own programming language

For the basic £99 95 you get the computer, complete with built-in operating system, and 14K of RAM 16 character scrolling LCD display, alpha numeric keyboard with a sophisticated calculator (including a built-in clock) two cartridges including a blank 8K unit for data.

The blank cartridges, called "datapaks" coming in 8K or 16K form, are *Eproms*, Information saved to them is thus preserved even when the machine is switched off Equally it has to be remembered that once data has been saved, using the special "save" key that area of memory is committed unless the entire cartridge is reformatted

The Organiser has a built-in database function, using the "find" key which will find any existing entries containing a specified string of characters With a 16K *Eprom* full of information to sort through, I found the longest wait was about five seconds, and retrieval usually came very much faster The scrolling screen, which can move forwards or back and, when using the "finance" pack, up and down as well, makes the most of the limited display

Popl, standing for Psion Organiser Programming Language, bears some resemblance to a drastically curtailed version of BBC Basic There are programs of up to 200 bytes. Numeric variables global and local are catered for as is *Goto* and a limited IF facility as well as a *Loop* command. The Finance Pack has built-in procedures for advanced mathematical and scientific calculations as well as more specialised tasks

In general the Organiser is a user-friendly machine with the number of built-in commands simple enough to grasp and easily accessible. But, just as many of the advantages of the machine stem from its use of *Eproms*, so do the major drawbacks. I discovered these after I saved information about a company to the blank datapak and, a day later, remembered that there was another office whose number I was also likely to need. But, once an entry has been saved, there is no way of adding to it without rewriting the whole entry and loosing the memory space of the original.

The "find" key will default to looking at cartridge 1 unless "2" is specified, and copying data from one datapak to the other is straightforward using the "save" key, if sometimes a little laborious.

The three 16K program packs, for maths, science and finance, cost £29 95 apiece and more are being developed, and there will also be a £39 95 RS232 interface to link the Organiser with a modem and transfer information to other computers or to connect it to a suitable printer

All in all, a machine which, at the price, should find instant appeal in the executive market and, depending on the packs developed, could soon develop a wider appeal. When, that is, one ludicrous and glaring fault has been corrected. You won't believe it but, the damn clock loses up to 20 minutes per day

Barbara Conway

A Sharpe

Hardware/Program *Musicom ML-10 Centronics Interface/Musicom software* **Micro** Spectrum plus Casio MT 200 music keyboard **Price** £43 (for the ML-10 unit) £9 95 (for the music software) **Supplier** Micro Musical, 37 Wood Lane, Shilton, Coventry CV7 9LA.

A while back *PCW* looked at the Casio MT200 — a portable keyboard that could be linked with any micro that had, or could be fitted with, Centronics interface

At the time all there was by way of software was whatever you could manage to create yourself using the grotty manual that came with the Casio PA 1 interface

Micro Musical is a company that specialises in developing, with both hardware and software, computer-music links and it is from them that the first sensible software for the MT 200 comes.

Its *Musicom* (minus points for naff name, Micro Musical) program enables you to enter, edit, repeat, and transpose music in up to eight parts and switch from any of the MT200's six rhythms and eight tone settings.

The notation for the music is not conventional dots and staves — although there is a promise of a music stave version in a couple of months) Instead, notes are referred to by letter and a number which determines which octave they fall in, eg A2 is the lowest A the Casio can play Micro Musical have replaced the ludicrous Casio system of using upper and lower-case letters for sharps and flats with a far more sensible + or — For example, +A2 is A sharp

However, it doesn't end there. If you use appropriate note values all the music can be automatically timed to the 'clock that drives the rhythm unit — so you can't fail to be in time even if, as often happens, the beat doesn't quite fall where you thought.

It's easy to get the program to do something simple but if you want to get into some really nifty funky stuff using the disco setting you will have to do quite a bit of experimenting with shortened notes and different rest lengths.

The only real problem with the package is that it is designed to work with a special Centronics interface Micro Musical have designed for the Spectrum called the ML 10 which cannot be used for ordinary printing purposes Doubtless a lot of people out there will already have a Centronics interface and won't want to buy another

The software may not work quite as straightforwardly with your particular interface, although Micro Musical are pretty helpful at sorting out such problems

Graham Taylor

Expand your attributes

Two new keywords for Interface 1 by B J Lowry

Any Spectrum Owner with Interface One will probably be aware of the Basic Extension facility the extra system variable *Vector* (Address 23735 & Address 23736) offers. Most Spectrum owners will also be aware of the lack of Basic commands to manipulate the attribute file, which at present can only be accessed via *Pokes* (hardly an aid to debugging) or via a *Print* statement, which can be inconvenient.

The following machine code program is a way of using Basic Extension to give a greater flexibility when manipulating the attribute file from Basic. The program defines two new Basic keywords:

a) ATTR * *I,P,C,L*

Where *I Ink* (In the range 0-7)
P Paper (In the range 0-7)
C Column (In the range 0-31)
L Line (In the range 0-23)

b) ATTR @ *L,C,N,F,I,P*

Where *L Start line* (In the range 0-23)
C Start column (In the range 0-31)
N No of Characters per line (In the range 1-32)
F No of Lines duration (In the range 1-24)
I Ink (Range as before)
P Paper (Range as before)

Keyword a will allow the user to specify the ink and paper of any screen position (including the bottom status lines), without destroying anything printed there previously, by specifying the position in column/line co-ordinates.

Keyword *b* allows the user to define a rectangle of colour, of width *N* and length *F* that begins on Line *L* at column *C*, without destroying anything printed previously.

Although both new statements only act on the ink and paper, the user can incorporate *flash* and *bright*. This is done by preceding the new statement with a line that sets the *flash/bright* on, and then immediately after the new statement inserting a line that sets *flash/bright* off. The user is able to do this because both commands access the system variable *attr p* (address 23693) and pick up the flash and bright bits.

The machine code is 413 bytes long and I have located it above Ramtop at starting address of FD5C (hex), 64860 (dec). For those of you without an Assembler, I have included a decimal dump of the code and a small Basic program to load this routine.

Enter the Basic loader and run it. The computer will ask you to input each number from the dump from left to right, eg, starting with 215 then 24 then 0 then 254 then 171. After five numbers the computer will display the sum (in the case of the first line 644). If the number agrees with the sum for that line on the printout, the line is ok and you can enter the next line. After entering the code it should be saved before testing. Save as *Save "Name" Code* 64860,413. After saving the code, *New* the computer and enter Lines 10 and 11 of the example program. *Run* these lines, *Load* back the code previously saved, then enter the rest of the example program. When entered, the program can be run by typing *Goto* 14, and pressing *Enter*.

One thing must be noted when using the new commands. Do not forget to change the system variable vector before trying to use them. Simply *Poke* 23735,92 and *Poke* 23736,253 at the beginning of any program that uses the commands, and don't forget to load the code.

```
00000 ; Zeus Assembler listing
00001 ;
00002 ; DATE 17/08/84
00003 ;
00004 ;     Extending BASIC
00005 ;     ===============
00006 ;
00007 ;   (C) 1984 BJ LOWRY
00008 ;
00009 ;   ATTR*I,P,C,L
00010 ;
00011 ;   ATTR@L,C,N,F,I,P
00012 ;
00013       ORG #FD5C
00014 SYN   RST 16      ;Page ROM
00015       DEFW #0018  ;Get Char
00016       CP 171      ;Is it ATTR
00017       JP Z,ATS    ;Yes,Jump
00018       JP #01F0    ;No,Error!
00019 ATS   RST 16      ;Page ROM
00020       DEFW #0020  ;Next Char
00021       CP 42       ;Is it '*'?
00022       JP NZ,NXT   ;No,Try '@'
00023       RST 16      ;Page ROM
00024       DEFW #0020  ;Next Char
00025       RST 16      ;Page ROM
00026       DEFW #1C82  ;Get LINE
00027       CP 44       ;Comma?
00028       JR Z,SN1    ;Yes,Jump
00029 ERR   RST 08      ;NO,Error!
00030       DEFB 0      ;Nonsense in
00031                   ;Basic-ERROR
00032 SN1   RST 16      ;Page ROM
00033       DEFW #0020  ;Next Char
00034       RST 16      ;Page ROM
00035       DEFW #1C82  ;Get COLUMN
00036       CP 44       ;Comma?
00037       JR NZ,ERR   ;No,Error
00038       RST 16      ;Page ROM
00039       DEFW #0020  ;Next Char
00040       RST 16      ;Page ROM
00041       DEFW #1C82  ;Get PAPER
00042       CP 44       ;Comma?
00043       JR NZ,ERR   ;No,Error!
00044       RST 16      ;Page ROM
00045       DEFW #0020  ;Next Char
00046       RST 16      ;Page ROM
00047       DEFW #1C82  ;Get INK
00048       CALL #05B7  ;Exit in
00049                   ;Syntax Time
00050 ;
00051 ;
00052 ; Run-time Module
00053 ;
00054 ;
00055 ERN   EQU #0000
00056 POS   RST 16      ;Page ROM
00057       DEFW #1E94  ;Get Line n
00058       CP 24       ;Is it in
00059       JR NC,ER3,Range?
00060       LD BC,31    ;Initialise
00061       LD DE,0     ; the
00062       LD HL,0     ;Registers!
00063       LD E,A      ;Save Line
00064       PUSH DE     ;& increment
00065       PUSH BC     ;before ROM
00066       RST 16      ;Page ROM
00067       DEFW #1E94  ;Get Column
00068       CP 32       ;Is it in
00069       JR NC,ER3,Range?
00070       POP BC      ;Restore
00071       POP DE      ;Line/incr
00072       LD D,A      ;SaveColumn
00073       LD HL,22528 ;ATR base
00074       LD A,0      ;ZEROise CNT
00075 CALC  CP E        ;=Line n ?
00076       JR Z,ENDC;Yes,Jump
00077       INC A       ;CNT=CNT+1
00078       ADC HL,BC;Add Offset
00079       JR CALC     ;RoundAgain
00080 ENDC  LD C,D      ;COL Offset
00081       LD B,0
00082       ADC HL,BC;Add it in
00083 ;
00084 ;Registers HL contain the
00085 ;address of the attribute
00086 ;byte to be changed
00087 ;
00088 ;Now for PAPER & INK -
00089 ;
00090 COLS  PUSH HL     ;Save Addr
00091       RST 16      ;Page ROM
00092       DEFW #1E94  ;Get Paper
00093       CP 8        ;Is it in
00094       JR NC,ER4,Range?
00095       LD DE,0     ;ZEROise DE
00096       LD D,A      ;Save Paper
00097       PUSH DE     ;& Addr
00098       PUSH HL     ;before ROM
00099       RST 16      ;Page ROM
00100       DEFW #1E94  ;Get Ink
00101       CP 8        ;Is it in
00102       JR NC,ER4,Range?
00103       POP HL      ;Restore
00104       POP DE      ;Paper,Addr
00105       LD E,A      ;Save Ink
00106       LD BC,0     ;Initialise
00107       LD HL,0     ;Registers
00108       LD A,0      ; to ZERO
00109 AJR   LD A,D      ;Get PAPER
00110       RLCA        ;Shift the
00111       RLCA        ; Bits to

00112       RLCA        ;Get P*8
00113       ADD A,E     ;Add in INK
00114       LD HL,23693 ;Add in
00115       LD E,A      ;any
00116       LD A,(HL)   ;Bright
00117       AND #C0     ;& Flash
00118       OR E        ;Bits
00119       POP HL      ;Get AtrAdr
00120       LD (HL),A;Alter Attr
00121       JP #0BC1    ;Finish
00122 ;
00123 ;
00124 ER3   LD (IY+ERN),#0A
00125       RST 08
00126 ;
00127 ;
00128 ER4   LD (IY+ERN),#13
```

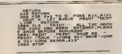
```
00129          RST 40
00130     ;
00131     NXT  CP 44           ;Is it ','
00132          JP NZ,ER2       ;No,Error2
00133          RST 16          ;Page ROM
00134          DEFW #0020      ;Next Char
00135          RST 16          ;Page ROM
00136          DEFW #1C82      ;StartLINE
00137          CP 44           ;Comma?
00138          JP NZ,ER2       ;No,Error2
00139          RST 16          ;Page ROM
00140          DEFW #0020      ;Next Char
00141          RST 16          ;Page ROM
00142          DEFW #1C82      ;Start COL
00143          CP 44           ;Comma?
00144          JP NZ,ER2       ;No,Error2
00145          RST 16          ;Page ROM
00146          DEFW #0020      ;Next Char
00147          RST 16          ;Page ROM
00148          DEFW #1C82      ;N/o Chars
00149          CP 44           ;Comma?
00150          JR NZ,ER2       ;No,Error2
00151          RST 16          ;Page ROM
00152          DEFW #0020      ;Next Char
00153          RST 16          ;Page ROM
00154          DEFW #1C82      ;EndLINE
00155          CP 44           ;Comma?
00156          JP NZ,ER2       ;No,Error2
00157          RST 16          ;Page ROM
00158          DEFW #0020      ;Next Char
00159          RST 16          ;Page ROM
00160          DEFW #1C82      ;INK
00161          CP 44           ;Comma?
00162          JP NZ,ER2       ;No,Error2
00163          RST 16          ;Page ROM
00164          DEFW #0020      ;Next Char
00165          RST 16          ;Page ROM
00166          DEFW #1C82      ;PAPER
00167          CALL #1BEE      ;SyntaxEND

00168     PRS  RST 16          ;Page ROM
00169          DEFW #1E94      ;Get PAPER
00170          CP 8            ;In range?
00171          JR NC,ER4       ;No,Error
00172          LD B,A          ;Store it
00173          PUSH BC         ;Save it
00174          RST 16          ;Page ROM
00175          DEFW #1E94      ;Get INK
00176          CP 8            ;In range?
00177          JR NC,ER4       ;No,Error
00178          POP BC          ;Get PAPER
00179          LD C,A          ;Save INK
00180          PUSH BC         ;and PAPER
00181          RST 16          ;Page ROM
00182          DEFW #1E94      ;ENDLINE
00183          CP 24           ;In range?
00184          JR NC,ER5       ;No,Error
00185          LD D,A          ;Store it
00186          PUSH DE         ;Save it
00187          RST 16          ;Page ROM
00188          DEFW #1E94      ;N/o CHARS
00189          CP 33           ;In range?
00190          JR NC,ER0       ;No,Error
00191          POP DE          ;ENDLINE
00192          LD E,A          ;Save EL &
00193          PUSH DE         ;N/o CHARS
00194          RST 16          ;Page ROM
00195          DEFW #1E94      ;StartCOL
00196          CP 32           ;In range?
00197          JR NC,ER3       ;No,Error
00198          LD H,A          ;Store it
00199          PUSH HL         ;Save it
00200          RST 16          ;Page ROM
00201          DEFW #1E94      ;StartLINE
00202          CP 24           ;In range?
00203          JP NC,ER3       ;No,Error
00204          POP HL          ;StartCOL
00205          LD L,A          ;Save SL
00206          POP DE
00207          POP BC
00208     ;
00209     ;NOW THE REGISTERS CONTAIN
00210     ; H = Start Column
00211     ; L = Start Line
00212     ; D = End Line
00213     ; E = Number of Chars
00214     ; B = Paper
00215     ; C = Ink
00216     ;
00217          CALL CERRS      ;ERRcheck
00218          PUSH BC         ;Calculate
00219          PUSH DE         ;the ATTR
00220          LD BC,31        ;Start
00221          EX DE,HL        ;Address
00222          LD HL,22528
00223          LD A,0
00224     CLC  CP E
00225          JR Z,EC1
00226          INC A
00227          ADC HL,BC
00228          JR CLC
00229     EC1  LD E,D
00230          LD D,0
00231          ADD HL,DE
00232     ;
00233     ;HL = ATTR Start Addr
00234     ;
00235          POP DE
00236          POP BC
00237          PUSH DE
00238          PUSH HL
00239          LD A,B
00240          RLCA
00241          RLCA
00242          RLCA
00243          ADD A,C
00244          LD E,A
00245          LD A,(23693)
00246          AND 192
00247          OR E
00248          LD (23695),A
00249     ;
00250     ; System Variable ATTR T
00251       contains New ATTR
00252     ;
00253          POP HL
00254          POP DE
00255          PUSH HL
00256          PUSH DE
00257          LD B,1
00258          LD C,D
00259          POP DE
00260          POP HL
00261     ;
00262     ; HL = BASE ADDRESS
00263     ; BC = END ADDRESS
00264     ;  E = N/O CHARS
00265     ;
00266          LD D,1
00267     AGN  LD A,(23695)
00268          LD (HL),A
00269          LD A,D
00270          CP E
00271          JR Z,ELN
00272          INC HL
00273          INC D
00274          JR AGN
00275     ELN  LD A,B
00276          CP C
00277          JR Z,FIN
00278          LD D,1
00279          PUSH DE
00280          LD D,0
00281          LD E,32
00282          ADC HL,DE
00283          POP DE
00284          PUSH DE
00285          LD D,0
00286          SBC HL,DE
00287          POP DE
00288          INC B
00289          JR AGN
00290     FIN  JP #0DC1
00291     CERRS  PUSH DE
00292          PUSH BC
00293          PUSH HL
00294          PUSH AF
00295          LD A,H
00296          ADD A,E
00297          CP 34
00298          JP NC,ER3
00299          LD A,L
00300          ADD A,D
00301          CP 25
00302          JP NC,ER3
00303          POP AF
00304          POP HL
00305          POP BC
00306          POP DE
00307          RET
```

```
  1 REM example program
  2 REM using the new commands
  3 REM
 10 CLEAR 64599
 11 POKE 23735,88  POKE 23736,2
53
 12 REM run above before
        entering the rest
 13 REM
 14 PRINT AT 7,7;"%"
 15 PRINT AT 1,0;"press a key"
 PAUSE 0
 16 ATTR *6,6,7,7
 17 PRINT "ATTRs"
 18 PAUSE 0  CLS
 20 PRINT AT 11,3;"a block of c
olour"  PRINT AT 1,0;"press a ke
y"  PAUSE 0
 21 ATTR *10,0,22,7,2,1
 22 PRINT "ATTRs"
 23 PAUSE 0  CLS  PRINT AT 12,
0;"with FLASH & BRIGHT"  PAUSE 0
 24 FLASH 1  BRIGHT 1
 25 ATTR *10,0,32,1,0,7
 26 FLASH 0  BRIGHT 0
 27 STOP
```

```
  1 REM BASIC LOADER
  2 REM
 10 CLEAR 64599  LET B=64600
 20 DIM A(8)
100 LET C=1
110 INPUT "Byte>> ";A
111 IF A<0 OR A>255 THEN PRINT
#0;AT 0,5;"BAD BYTE!-ENTER AGAIN
"  BEEP .5,-24  PAUSE 50  GO TO
110
112 LET A(C)=A
113 PRINT A
114 LET C=C+1
115 IF C=9 THEN LET C=1  GO SUB
200
120 IF B>=B+416 THEN GO TO 1000
122 GO TO 110
200 LET SUM=0  FOR X=1 TO 8
210 LET SUM=SUM+A(X)  NEXT X
211 PRINT "SUM= ";SUM;" -IF OK
PRESS 0,IF NOT,1"
212 PAUSE 0
213 IF INKEY$="0" THEN GO SUB 3
00
214 IF INKEY$="1" THEN PRINT #0
;AT 0,0;"CANCELLED LAST LINE,ENT
ER AGAIN"  BEEP .5,-24  PAUSE 50
```

Continued over the page



```
RETURN
215 RETURN
300 FOR X=1 TO 5: POKE B+X,A(X):
 NEXT X: LET B=B+5: PRINT "NEXT
LINE": RETURN
1000 CLS : PRINT '' ALL THE MACH
INE CODE HAS BEEN ENTERED,PLEAS
E SAVE BEFORE RUN-NING"
1001 PRINT : PRINT "SAVE AS ":
PRINT "SAVE "+CHR$ 34+"NAME"+CHR
$ 34+" CODE 64286,413"
1002 STOP
```

****DECIMAL DUMP****

215	21	0	254	171	SUM	654
202	183	253	198	241	SUM	994
1	215	32	0	254	SUM	509
42	194	3	254	215	SUM	708
32	0	215	138	20	SUM	405
254	44	40	0	231	SUM	571
0	215	32	0	215	SUM	462
130	20	234	44	32	SUM	460
244	215	59	0	210	SUM	728
130	20	254	44	33	SUM	480
254	215	32	0	215	SUM	880
130	20	205	183	5	SUM	581
215	148	30	254	24	SUM	671
42	20	1	31	0	SUM	170
17	0	0	33	0	SUM	50
0	99	213	187	215	SUM	720
148	38	254	32	48	SUM	518
71	193	205	87	33	SUM	883
0	85	80	0	187	SUM	337
48	5	80	207	74	SUM	416
24	240	74	0	0	SUM	388
237	74	229	216	140	SUM	893
32	254	0	48	47	SUM	387
17	0	0	87	213	SUM	317
229	215	140	30	254	SUM	275
0	48	34	235	205	SUM	584
20	1	0	82	33	SUM	129
3	0	7	0	123	SUM	104
7	7	7	131	33	SUM	188
141	22	98	120	238	SUM	684
192	179	239	119	188	SUM	918
193	5	253	54	0	SUM	583
10	239	253	64	0	SUM	850
19	239	254	64	184	SUM	770

121	203	215	32	0	SUM	821
215	138	20	254	44	SUM	671
184	181	254	215	32	SUM	916
9	215	138	20	254	SUM	627
44	184	181	254	215	SUM	829
32	0	215	138	20	SUM	405
254	64	184	181	254	SUM	967
215	32	0	215	138	SUM	600
20	254	44	194	181	SUM	641
254	215	32	0	215	SUM	716
130	20	254	44	184	SUM	688
181	254	215	58	0	SUM	[illegible]
215	138	215	205	183	SUM	751
5	215	148	30	254	SUM	652
0	40	178	71	197	SUM	490
215	142	30	254	0	SUM	855
48	155	193	79	197	SUM	863
215	145	30	254	25	SUM	872
48	151	87	213	215	SUM	714
148	30	254	35	48	SUM	810
142	229	98	213	215	SUM	874
145	35	254	32	48	SUM	512
132	183	229	215	148	SUM	807
30	254	24	218	197	SUM	679
128	228	111	209	193	SUM	883
205	209	254	197	213	SUM	1085
1	31	0	235	33	SUM	300
0	85	52	0	187	SUM	337
40	5	80	237	74	SUM	416
24	240	88	22	0	SUM	334
237	90	209	193	213	SUM	942
225	128	7	7	7	SUM	378
129	98	96	161	32	SUM	516
238	188	179	30	143	SUM	784
83	250	209	229	213	SUM	960
0	1	74	209	235	SUM	518
22	1	88	143	82	SUM	318
119	122	187	40	4	SUM	472
38	28	24	244	120	SUM	443
195	48	15	22	1	SUM	257
213	20	0	30	32	SUM	287
237	95	209	213	29	SUM	771
0	237	82	209	4	SUM	532
64	221	195	183	5	SUM	838
213	197	229	245	124	SUM	1008
139	254	34	210	254	SUM	880
203	125	130	254	35	SUM	787
218	249	203	241	235	SUM	1170
193	209	201	0	0	SUM	603


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Fans for the memory

Graham Paterson shows you how to get things moving on the Amstrad CPC 464

This program demonstrates how the Amstrad can use *Ink* statements to obtain animation in a similar way as that on the BBC machine.

I have used Mode 0 to obtain the maximum number of *inks*, although only seven colours are used.

The overall routine draws three fans, two of which are identical in colour. Then all the *Ink* statements are altered in sequence to obtain the desired effect of animation.

Program Notes

Lines	Notes
20-70	Sets the origin of graphics cursor and all delays, counters and ink colour variables
80	Print title
90-100	Assigns ink colours for starting
110-320	Draws the Fan using different inks and colours for a particular section of the Fan
330	Moves to counter
340-370	Assigns alternate inks with respective colours
400-410	Checks counter
420-440	Depending on counter, changes graphics cursor position, the *Ink* number being used and its colours
460-520	Changes all the *Ink* statements to sequential colours using for next loop to slow speed down. Creates the animation
530-560	Sound routine for fan movement

It should be noted that this program was originally developed from one that displayed cylinders. This may be observed if the *Draw* command in Line 140 is change to *Plot* and the *Rem* removed in Line 150.

```
10 REM ANIMATED FANS
20 x=320 y=200
30 z=200 t=0 w=30 s=150
40 l=35 a=1 b=2 c=3 d=4 e=7 v=24 g=20 h=
0
50 MODE 0
60 BORDER 0 INK 8,0
70 CLS
80 LOCATE 4,1 PRINT"AMSTRAD FANS"
90 f=a i=e
100 INK f,i
110 FOR p=1 TO 360
120 DEG
130 MOVE x,y
140 DRAW x+z*COS(p),y+l*SIN(p),f
150 REM DRAWP 0,s,f
160 IF p>22.5 THEN GOSUB 350
170 IF p>45 THEN GOSUB 360
180 IF p>67.5 THEN GOSUB 370
190 IF p>90 THEN GOSUB 340
200 IF p>112.5 THEN GOSUB 350
210 IF p>135 THEN GOSUB 360
220 IF p>157.5 THEN GOSUB 370
230 IF p>180 THEN GOSUB 340
240 IF p>202.5 THEN GOSUB 350
250 IF p>225 THEN GOSUB 360
260 IF p>247.5 THEN GOSUB 370
270 IF p>270 THEN GOSUB 340
280 IF p>292.5 THEN GOSUB 350
290 IF p>315 THEN GOSUB 360
300 IF p>337.5 THEN GOSUB 370
310 INK f,i
320 NEXT p
330 GOTO 380
340 f=a i=e RETURN
350 f=b i=v RETURN
360 f=c i=g RETURN
370 f=d i=h RETURN
380 REM
390 t=t+1
400 IF t=2 THEN GOTO 430
410 IF t=3 THEN GOTO 440
420 x=120 y=300 s=50 z=50 l=25 a=5 b=6 c
=7 d=8 e=26 v=11 g=6 f=a i=e GOTO 90
430 x=500 y=300 l=75 GOTO 90
440 a=1 b=2 c=3 d=4 e=5 v=6 g=7 h=8
450 EVERY 5 GOSUB 540
460 INK a,24 INK b,7 INK c,0 INK d,20 IN
K e,0 INK v,26 INK g,11 INK h,6
470 FOR q=1 TO w NEXT
480 INK a,20 INK b,0 INK c,7 INK d,24 IN
K e,6 INK v,0 INK g,26 INK h,11
490 FOR q=1 TO w NEXT
500 INK a,0 INK b,7 INK c,24 INK d,20 IN
K e,11 INK v,6 INK g,0 INK h,26
510 FOR q=1 TO w NEXT
520 INK a,7 INK b,24 INK c,20 INK d,0 IN
K e,26 INK v,11 INK g,6 INK h,0
530 FOR q=1 TO w NEXT GOTO 460
540 ENV 1,3,-2,85
550 ENT 1,5,-1,51
560 SOUND 1,150,5,11,1,1,5
570 RETURN
```

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This program allows the user to choose a character he or she wants to define, then presents a blow-up of this character, as well as the actual size while defining. This is very useful when designing gothic or modern character sets.

It is quite simple to operate. When the code of the character to be defined is input, the character size must be entered, *CSize ?,0* This can be in the range nought to three. This is necessary because the QL uses a different range of pixels in each character row, depending on the pre-set character size. For instance, character size one gives the maximum 8 pixels across, and character size three gives 5 pixels

When these graphics are used in your own programs, you must use the *CSize* command with the character size (which you entered when defining the character) as its first argument, eg, *CSize* 1,0 or *CSize* 1,1 Failure to do this may cause odd things to happen. After this, the user can experiment with the character definition on the blow-up grid.

Commands

Space-bar light pixel at cursor position
Shift remove pixel at cursor position
C clear grid
N next character definition
R replace old character definition
P print out definition bytes
Q leave program

If space has already been reserved on the QL (*Respr*(100) ... etc), I recommend the QL is reset before running *Definer*

```
*DEFINER*

49:

SPACE...DOT ON
SHIFT...DOT OFF
C.......CLEAR
N.......NEXT CHARACTER
R.......REPLACE
P.......PRINT BYTES
Q.......QUIT

49: 145 177 145 145 145 145 185 129 255
```

```
1 REMark : QL Graphics Definer
2 REMark   by Richard Snowdon (*SnowSaft*)
100 WINDOW #1,450,210,33,6.PAPER 0
110 WINDOW #0,450,40,33,216-PAPER #2,0
120 MODE 4 SCALE 256,0,0 BORDER
2,175 BORDER #0,2,2
130 meveset
140 ask
150 initiate
160 setup
170 display
180 newset
190 start
200 STOP
210 DEFine PROCedure initiate
220 CSIZE 2,0
230 DIM pix(9,8)
240 FOR f=1 TO 9
250 FOR e=1 TO 8
260 pix(f,e-(size>1))=((PEEK(charbase+f)
&&(2^(8-e))=0)*32
270 NEXT e-NEXT f
280 x=1-y=1
290 END DEFine
300 DEFine PROCedure display
310 FOR f=1 TO 9
320 FOR e=1 TO across
330 AT f,e:PRINT CHR$(pix(f,e))
340 NEXT e-NEXT f
350 END DEFine
360 DEFine PROCedure start
370 REPeat mainloop
380 k=KEYROW(1)
390 AT y,x.PRINT CHR$(pix(y,x))
400 IF KEYROW(6)&&8 THEN CSIZE size.1.STOP
410 IF KEYROW(2)&&8 THEN
420 FOR f=1 TO 9 FOR e=1 TO 8 pix(f,e)=32:
NEXT e POKE charbase+f,0.NEXT f:display
430 END IF
440 IF k&&2 AND x>1 THEN x=x-1
450 IF KEYROW(5)&&16 THEN
460 FOR replace=1 TO 9.POKE charbase+
replace,PEEK(oldbase+10+(e-32)*9+replace) N
EXT replace-initiate:display
470 END IF
480 IF k&&16 AND x<across THEN x=x+1
490 IF k&&4 AND y>1 THEN y=y-1
500 IF k&&128 AND y<9 THEN y=y+1
510 IF KEYROW(7)&&1 AND pix(y.x)=0 THEN
pix(y,x)=32-POKE charbase+y,(PEEK(charba
se+y))^^2^(8-x-(size>1))
520 AT 4,22:CSIZE size,1 PRINT CHR$(a),' ',
:CSIZE size,0 PRINT CHR$(a).CSIZE 2.0
530 IF k&&64 AND pix(y,x)=32 THEN pix(y,x)
=0:POKE charbase+y,(PEEK(charbase+y))|
|2^(8-x-(size>1))
```

Continued over the page

```
540 IF KEYROW(7)&&64 THEN RUN
550 IF KEYROW(4)&&32 THEN prit
560 AT y,x-PRINT CHR$(32+(pix(y,x)>0)*255)
570 END REPeat mainleep
580 DEFine PROCedure setup
590 CLS
600 CSIZE 2,1:AT 0,18 PRINT '*DEFINER* :AT
2,18:PRINT a,':'·CSIZE 2,0
610 AT 12,0.PRINT  SPACE   DDT ON \'SHIFT.
..DDT OFF \ C..     CLEAR \"N. . . . NE
XT CHARACTER"\"R..      REPLACE \ P.
PRINT BYTES'\"Q..     QUIT
620 INK 2:CSIZE #0,1,1
630 across=8-2*(size=0)-3*(size>1)
640 AT 0,0:PRINT FILL$(CHR$(255),across+2)
650 FOR y=1 TO 9 AT y,0 PRINT CHR$(255);
FILL$('  ,across);CHR$(255)
660 PRINT FILL$(CHR$(255),across+2)
670 INK 7
680 END DEFine
690 DEFine PROCedure moveset
700 set=167722
710 IF RESPR(0)>261120 THEN
720 oldbase=PEEK_L(set)
730 newbase=RESPR(875)
740 FOR m=0 TO 875 STEP 4
750 POKE_L newbase+m,PEEK_L(oldbase+m)
760 NEXT m
770 END IF
780 oldset
790 END DEFine
800 DEFine PROCedure ask
810 CLS-CSIZE 0,0
820 PRINT 'Select the character to be
re-defined"\'by entering its code (32-127)
830 INPUT \'Character code? ",a
840 IF a<32 OR a>127 THEN STOP
850 PRINT \"What character
size (0 to 3)? ",
860 REPeat vet
870 size=INKEY$(-1)
880 SELect ON size=0 TO 3:EXIT vet
890 END REPeat vet
900 PRINT size
910 charbase=newbase+10+(a-32)*9
920 END DEFine
930 DEFine PROCedure newset
940 POKE_L set,newbase
950 END DEFine
960 DEFine PROCedure oldset
970 POKE_L set,oldbase
980 END DEFine
990 DEFine PROCedure prit
1000 LOCal answer$,chan
1010 CLS#0.PRINT #0, To printer (y/n)
,:answer$=INKEY$(-1)
1020 chan=(answer$=='Y')*0
1030 IF chan THEN OPEN #8,ser1
1040 PRINT #chan,\a,'.', FOR B=1 TO
9.PRINT #chan,' ';PEEK(charbase+B),.NEXT B
1050 END DEFine
```



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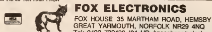
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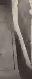
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Fatal mistake

A simple error recovery for the CBM 64
by ***Simon Wallace***

One of the most frustrating occurrences is for a program to crash due to program error Very often, this error will be due to silly input by the user, and it may not even be possible to guard against such an event from within the Basic program. The only answer is to design programs to recover from error, even where you do not believe that an error could occur!

Many languages and machines have automatic facilities to assist in recovery, but the Commodore 64 does not. The routine shown in this article will enable control to be restored to the program automatically in the event of an error

The first step is to establish a point in the program which is suitable to *Goto* in order to recover When a program is started with *Goto* rather than *Run*, the variables are not reinitialised, and the program will restart in the same state as when it was broken. Thus, nothing is lost provided that the program has been designed to restart.

The program must not attempt to define arrays with the *Dim* statement or functions with *Def Fn* as this has already been done once Files can not be opened a second time, nor can *Data* be *Read* a second time, unless *Restore* is used.

As you will be unable to predict where the error will occur it is very difficult to make assumptions. If files may or may not be open, always close, then re-open them in the error routine, as this will not cause an error Never re-enter in the middle of a subroutine or *For Next* loop These procedures can be restarted safely, but can not be exited from unless they have been entered at the very beginning If tape or disc files are being processed, then a specialised data-recovery routine may be needed.

If you set up an error-handling routine according to the above rules, you will be able to restart the program manually by typing *Goto xxx* where *xxx* is the line number of your routine This in itself can be invaluable. Consider working with the word processor for an hour (as I am at the moment) and not daring to make a mistake lest all your typing be lost! My word processor has just such an error-recovery routine at Line 999 – an easy number to remember (See *PCW* Vol 3, Nos 26, 27 for listing of word processor)

The machine-code routine automates the process of typing *Goto 999* when an error has occured. This may sound trivial, but it is far easier to include the routine in the program, than to attempt to explain how and when to recover.

It works as follows When the error-message routine of the Commodore 64 is entered via the vector at 768-769 control is directed to the new routine which inserts *Goto 999* into the keyboard buffer As soon as Basic is ready to accept your next command, the message is processed as if it had been typed on the keyboard. In addition to this, the error message number is copied into the unused byte at location 2 The recovery routine in your program can then access this number if so desired. The meanings of the error numbers are given in the table below

The routine is located at 679 which should be unused. If this is not convenient, change the value of *J* in Line 20 to the start address you prefer If you would rather use a line number other than 999, change the 57 in Lines 74,75 and 76 to the ASCII codes for the 3-digit line number required (see Appendix F in the User Manual) If you wish the error message to be suppressed, include Line 89 as, *89 Data 162-138* To reset the vector for normal error handling, *Poke 768 139 Poke 769,227*

The example program demonstrates how the error-handling routine works When the program is run, enter any positive number There will be no abnormal effect as the arithmetic is valid. If zero is entered, a program error is generated as division by zero is illegal.

The program uses the routine to recover by passing control to Line 999 The error message number is found with *Peek*(2), and then printed. Provided it is 20 as expected, control is returned to the main loop Try changing Line 115 so that it generates a different error, such as a syntax error, and see what effect it has

Clearly any professional-quality program should include an error-recovery routine such as this However, even the most basic Basic will be more satisfying if it keeps going to the correct end. Additionally, error proofing such as this can be used in conjunction with break-proofing (see *PCW* Vol 3, No 13) to ensure that a program terminates as intended without the user being able to interrupt execution, whether by accident or design.

Error message table

Byte 2	Message
1	TOO MANY FILES
2	FILE OPEN
3	FILE NOT OPEN
4	FILE NOT FOUND
5	DEVICE NOT PRESENT
6	NOT INPUT FILE
7	NOT OUTPUT FILE
8	MISSING FILE NAME
9	ILLEGAL DEVICE NUMBER
10	NEXT WITHOUT FOR
11	SYNTAX
12	RETURN WITHOUT GOSUB
13	OUT OF DATA
14	ILLEGAL QUANTITY
15	OVERFLOW
16	OUT OF MEMORY
17	UNDEF'D STATEMENT
18	BAD SUBSCRIPT
19	REDIM'D ARRAY
20	DIVISION BY ZERO
21	ILLEGAL DIRECT
22	TYPE MISMATCH
23	STRING TOO LONG
24	FILE DATA
25	FORMULA TOO COMPLEX
26	CAN'T CONTINUE
27	UNDEF'D FUNCTION
28	VERIFY
29	LOAD
30	BREAK

Continued over the page

Commodore 64

```
0 REM PROGRAM TO DEMONSTRATE
   ERROR RECOVERY
5 REM
10 REM FOLLOWING CODE
   SETS UP RECOVERY
15 REM
20 J=679   JA=J
30 READ 1   IF I<0 THEN 45
40 POKE J,I · J=J+1   GOTO 30
45 I=INT (JA/256)
46 J=JA-I*256
50 POKE 768,J   POKE 759,1
60 DATA 134,2
70 DATA 224,128,240,34
72 DATA 169,71,141,119,2
73 DATA 169,111,141,120,2
74 DATA 169,57,141,121,2
75 DATA 169,57,141,122,2
76 DATA 169,57,141,123,2
00 DATA 169,13,141,124,2
85 DATA 169,6,133,198
86 REM
87 REM NEXT LINE IF USED SUPFRESSES
08 PEM THNE ERROR MESSHGE
89 REM... 09 DATA 162,128
90 DATA 76,139,227,-1
99 REM
100 REM EXAMPLE PROGRAM STARTS
101 REM
105 PRINT "ENTER ZERO TO
CRASN PROGRAM"
106 PRINT "OR NEGATIVE
NUMBER TO STOP"
110 INPUT D   IF D<0 THEN END
115 E=1/D
120 GOTO 105
900 REM
905 REM ON ERROR -
JUMPS TO LABEL 999
910 REM     AS IF YOU
TYPED 'GOTO 999'
915 REM
920 REM ERROR NUMBER
IS STORED IN LOC 2
925 REM
999 PRINT "ERROR ROUTINE ENTERED"
1000 ER=PEEK(2)
1010 PRINT "ERROR NUMBER IS",ER
1020 IF ER=20 THEN 105
1030 PRINT "THIS REALLY
IS AN UNEXPECTED ERROR"
1040 STOP
```

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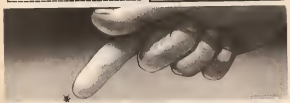
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Time is on your side

***Andrew Heptonstall** shows you how to teach children the time (without restorting to Playschool) on the BBC B*

This program was designed to help children learn to tell the time. To make this process easier, it has three levels of difficulty. Level one tests hours only, level two includes quarter and half-past the hour, and level three goes on to explore the mysteries of five minute intervals!

I would suggest that an adult is present when the program is first run, to show the child how to enter his or her answer. Possible answers are presented in a multiple choice format and either answer one, two or three is chosen. This method of presentation was used to prevent spelling mistakes causing problems.

The program should work on a Model A if the *Colour* and *Gcol* statements are missed out, and the *Mode* 1 statements are changed to *Mode* 4.

Program notes

Procinit:	Calls procedures to set up the program.
Procarray:	Fills the array which contains the times
Procname:	Asks you to type in your name
Proclevel:	Choose the level.
Procrandomtimes:	Selects random times depending on the level.
Procmain:	Calls the other procedures.
Procolours:	Redefines the colours.
Proclock:	Draws the clock.
Prochands:	Draws the hands on the clock.
Prochoose:	Chooses times for the other options.
Proctime:	Divides the time by 5.
Procprint:	Prints the time in a random order on the screen.
Procanswer:	Waits for an answer
Proctick:	Draws a tick if the answer is correct.
Procross:	Draws a cross if the answer is wrong
Procpause:	Pauses for a set amount of time
Fnx:	Pr[illegible]es a x co-ordinate for drawing the clock
Fny:	Provides a y co-ordinate for drawing the clock
Fnhour:	Selects a random hour
Fnmin:	Select a random minute, depending on the level. (This function is not called if the level selected is one).

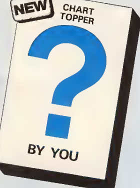
```
 10 REM **    The Time Tutor      **
 20 REM ** Andrew B. Heptonstall **
 30 REM **   August 4th. 1984     **
 40 ONERROR GOTO 40
 50 *KEY10 OLD|MRUN|M
 60 MODE 7
 70 CLEAR
 80 forever=FALSE
 90 PROCinit
100 PROClevel
110   REPEAT
120 PROCrandomtimes
130MODE1
140 PROCmain
150 IF NOT correct THEN MODE1:PROCmain
160   UNTIL forever
170 DEF PROCinit
180 PROCarray
190 PROCname
200 ENDPROC
210 DEF PROCarray
220 ENVELOPE 1,2,0,0,0,1,1,1,126,
    -2,-2,-2,126,100
230 DIM A$(12)
240  FOR A%=1 TO 12
250 READ A$(A%)
260  NEXT A%
270 ENDPROC
280 DATA 5 past,10 past,quarter past,20
    past,25 past,half past,25 to,20 to,qua
    rter to,10 to,5 to," o'clock"
290 DEF PROCname
300 CLS
310  FOR A%=0 TO 1
320 PRINTCHR$141;CHR$131;SPC(6);
    "The Time Tutor"
330  NEXT A%
340 PRINT'CHR$129;"You must now
    type in your name."
350 PRINTCHR$129;"(And then press RETURN)"
360 PRINT '''
370 INPUT "What is your name",N$
380 ENDPROC
390 DEFPROClevel
400 CLS
410  FOR A%=0 TO 1
420 PRINTCHR$141;CHR$131;SPC(6);
    "The Time Tutor"
430  NEXT A%
440 PRINT''CHR$129;SPC(2);
    "What level do you want?"
450 PRINT'CHR$130;SPC(1);"Level
    1: Hours only"
460 PRINT'CHR$130;SPC(1);"Level 2:
    Half and quarter past"
470 PRINT'CHR$130;SPC(1);"Level 3:
    Any five minutes"
480 PRINT''CHR$134;CHR$136;SPC(4);
    "Press 1,2 or 3"
490 *FX21,0
500   REPEAT
510 LET G$=GET$
520 UNTIL G$="1" OR G$="2" OR G$="3"
530 IF G$="1" THEN LET M%=60 ELSE M%=FALSE
540 IF G$="2" THEN LET D%=4:E%=15
550 IF G$="3" THEN LET D%=12:E%=5
560 ENDPROC
570 DEF PROCrandomtimes
580 IF M%<>60 THEN LET M%=FNmin(D%,E%)
590 LET H%=FNhour(12)
600 ENDPROC
610 DEF PROCmain
620 VDU 23;8202;0;0;0;
630 PROCcolours
640 PROCclock
650 PROChands
660 PROCchoose
670 PROCanswer
680 ENDPROC
690 DEF PROCcolours
700 VDU 19,1,6,0,0,0
710 VDU 19,2,2,0,0,0
720 VDU 19,0,4,0,0,0
730 ENDPROC
740 DEF PROCclock
750 PRINTTAB(15,0);"Time Tutor"
760 LOCAL var1%,var2%,var3%
770 MOVE 450,900
780  FOR V%=0 TO 366 STEP 12
790 LET X%=SIN(RAD(V%))*400+450
800 LET Y%=COS(RAD(V%))*400+500
810 DRAW X%,Y%
820  NEXT V%
830 VDU 5
```

Continued over the page

```
840  FOR A%=1 TO 12
850 LET X%=FNx(A%)
860 LET Y%=FNy(A%)
870 MOVE X%+450,Y%+560
880 DRAW (X%*.9)+450,(Y%*.9)+500
890 MOVE (X%*1.1)+150,(Y%*1.1)+500
900 PRINT A%;
910 NEXT A%
920 VDU 4
930 ENDPROC
940 DEF PROChands
950 GCOL 0,1
960 LOCAL V1%,V2%,V3%,V4%
970 LET X%=FNx(M%/5)
980 LET Y%=FNy(M%/5)
990 IF (M%>35 AND M%<55) OR (M%>5 AND M%<25)
THEN LETV1%=450:V2%=450:V3%=470:V
4%=530 ELSE LETV1%=480:V2%=420:V3%=500:V4%=500
1000 MOVE V1%,V3%
1010 MOVE V2%,V4%
1020 PLOT 85,X%+450,Y%+500
1030 GCOL 0,2
1040 LET X%=FNx(H%)
1050 LET Y%=FNy(H%)
1060 IF (H%>7 AND M%<11) OR (M%>1 AND H%<5)
THEN LET V1%=450:V2%=450:V3%=470:V4
%=530 ELSE LET V1%=480:
V2%=420:V3%=500:V4%=500
1070 MOVE V1%,V3%
1080 MOVE V2%,V4%
1090 PLOT 85,(X%*.6)+450,(Y%*.6)+500
1100 ENDPROC
1110 DEF PROCchoose
1120 LET T%=0
1130 LOCAL V1%,V2%,V3%,V4%
1140 IF M%=60 THEN LET V1%=60:
V3%=60:PROCchimes:80TO1170
1150 LET V1%=FNmin(D%,E%)
1160 LET V3%=FNmin(D%,E%)
1170 REPEAT
1180 LET V2%=FNhour(12)
1190 LET V4%=FNhour(12)
1200   UNTIL H%<>V2% AND H%<>V4% AND V2%<>V4%
1210 PROCtime(M%)
1220 LET M%=T%
1230 LET M$=A$(T%)
1240 PROCtime(V1%)
1250 LET V1%=T%
1260 LET V1$=A$(T%)
1270 PROCtime(V3%)
1280 LET V3%=T%
1290 LET V3$=A$(T%)
1300 PROCprint
1310 ENDPROC
1320 DEF PROCchimes
1330 RESTORE 1390
1340  FOR A%=1 TO 8
1350 READ pitch,duration
1360 SOUND 1,1,pitch+48,duration
1370  NEXT A%
1380 ENDPROC
1390 DATA 61,10,33,10,41,10,13,20
1400 DATA 13,10,41,10,49,10,33,10
1410 DEF PROCtime(Time)
1420 LET T%=Time/5
1430 ENDPROC
1440 DEF PROCprint
1450   REPEAT
1460 LET Y1%=(RND(3)*3)
1470 LET Y2%=(AND(3)*3)
1480 LET Y3%=(AND(3)*3)
1490   UNTIL Y1%<>Y2% AND Y2%<>Y3%
AND Y3%<>Y1%
1500 COLOUR 2
1510 COLOUR 131
1520 PRINTTAB(26,5);"1.";
TAB(26,8);"2.";TAB(26,11);"3."
1530 COLOUR 1
1540 IF V3%=12 THEN PRINTTAB(28,2+Y1%);V4%;
V3$ ELSE PRINTTAB(28,2+Y1%);V3$;TAB(
32,3+Y1%);V4%
1550 IFV1%=12 THEN PRINTTAB(28,2+Y2%);V2%;V1$
ELSE PRINTTAB(28,2+Y2%);V1$;TAB(3
2,3+Y2%);V2%
1560 IF M%=12 THEN PRINTTAB(28,2+Y3%);H%;M$
ELSE PRINTTAB(28,2+Y3%);M$;TAB(32,3
+Y3%);H%
1570 ENDPROC
1580 DEF PROCanswer
1590 LET M%=M%*5
1860 COLOUR 0
1610 COLOUR 129
1620 LET Y3%=Y3%/3
1630 PRINTTAB(28,18);"Please press"
1640 PRINTTAB(28,19);"1,2 or 3     "
1650 PRINTTAB(28,20);"to choose    "
1660 PRINTTAB(28,21);"the right    "
1620 PRINTTAB(28,22);"answer.      "
1680 *FX21,0
1690   REPEAT
1700 G$=GET$
1710   UNTIL G$="1" OR G$="2" OR G$="3"
1720 CLS
1730 PRINTTAB(15,1);"Time Tutor"
1740 IF Y3%<>(ASC(G$)-48) THEN GOSUB
1750 ENDPROC
1840 ELSE GOSUB 1760
1760 PRINT'TAB(3);"Well done ";N$;"
you choose the"
1770 PRINT" correct answer."
1780 PROCtick
1790 PRINT'"  Press the ANY KEY
to play again"
1860 *FX21,0
1810 LET G$=GET$
1820 LET correct=TRUE
1830 RETURN
1840 PRINT'TAB(8);"Sorry ";N$;"
you choose the"
1850 PRINT " wrong answer."
1860 PROCcross
1870 PRINT'"  Press ANY KEY to try again"
1880 *FX21,0
1890 LET G$=GET$
1900 LET correct=FALSE
1910 RETURN
1920 DEF PROCtick
1930 GCOL 0,0
1940 MOVE 448,192
1950 DRAW 640,0
1960 DRAW 1024,512
1970 ENDPROC
1980 DEF PROCcross
1770 GCOL 0,0
2000 MOVE 448,576
2010 DRAW 768,64
2020 MOVE 448,64
2030 DRAW 768,576
2040 ENDPROC
2080 DEF PROCpause(P%)
2060 TIME=0
2070   REPEAT
2080   UNTIL TIME>P%
2090 ENDPROC
2100 DEF FNx(x)=SINRAD(x*30)*400
2110 DEF FNy(y)=COSRAD(y*30)*400
2120 DEF FNhour(x)=RND(x)
2130 DEF FNmin(x,y)=RND(x)*y
```


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Open Forum

Open Forum is for you to publish your programs and ideas. Take care that the listings you send in are all bug-free. Your documentation should start with a general description of the program and what it does and then give some detail of how the program is constructed.

Plotter

on Commodore 64

This program should also work on the unexpanded Vic 20 If you have a 1520 plotter/printer this program allows you to draw and doodle directly onto the paper without having to work out lots of co-ordinates

You can draw in 8 directions by using the keys mentioned in the program. By keying S you can change the pen colour or the mode, of which there are two While in mode M your pen will just move about without making any marks but in mode D lines will be drawn.

Directional movement of the pen is given using the main compass points

Program notes

3-190 Initialise and set screen display
130-230 Check for key depression and move to appropriate sub-routine
240-280 Draws or moves to next point.
1000-1020 North west movement.
2000-2030 North.
3000-3030 North-east.
4000-4020 West
5000 5020 East.
6000-6020 South west
7000-7020 South.
8000-8020 South-east.
9000-10110 Change colour or mode

Variables

M$ Mode
C$ Colour
A$, B$, B$ Input variables.
X,Y Co-ordinates of pen.
O$ Operation being performed.
H Maximum height of drawing

```
1 REM "DOODLE" BY SARAH COTTON
2 REM FOR USE ON THE 1520 PLOTTER
/PRINTER
3 POKE650,255
8 M$= D :C$='BLACK
10 OPEN1,4,1:OPEN2,4,2:PRINT#2,'0'
40 INPUT"sQQQQQQQQQQ]HEIGHT
(50-999)';H
45 IFH<50ORH>999THEN40
50 PRINT#1,"M ;0,-H:PRINT#1, I"
70 PRINT's"
80 PRINT"QQ]COLOUR:";C$
85 PRINT"QQ]MODE:';M$
87 PRINT"QQ]OPERATION:';O$
90 PRINT"Q QWE"
100 PRINT' A D"
110 PRINT" ZXC'
120 PRINT"QQS-COLOUR/MODE"
130 GETA$
140 IFA$=""THEN130
150 IFA$="Q"THENGOSUB1000
160 IFA$="W THENGOSUB2000
170 IFA$= E'THENGOSUB3000
180 IFA$='A'THENGOSUB4000
190 IFA$='D"THENGOSUB5000
```

Arcade Avenue

Freddy's cat

The *Jetset Willy* postbag is bulging, as usual, with some particularly interesting letters this week. First of all thanks to James Blair of Coleraine and David Whittall of Birmingham for your letters but the *Pokes* are a bit too familiar to publish again. Stephen Cargill of Southport has sent in the following small program for owners of Interface 1 which stops the crash when the pause key is pressed. To be loaded at 8B1F hex or 35615 decimal.

Hex	Assembly
21 E2 86	LD HL, 86E2
01 FE BF	LD BC, BFFE
ED 78	IN, A, (C)
2F	CPL
E6 1F	AND 1F

The problem occurs because port 0 is read when the key is pressed The new program provides an improved method of testing the keyboard. To load it type *Merge*" (*Enter*) — load the basic then type *Clear 32767:Load* "" *Code* (*Enter*) Then enter the hex and type *Save* "jesse" *Line* 1:*Save* "jsw" *Code* 32768, 32768 (*Enter*)" For those of you with no hex loader I have converted Stephen's hex — *Poke* 35615 to 35625 33, 226, 133, 1, 254, 191, 237, 120, 47 230, 31

Along similar lines, Graeme Carrot of Gosforth has sent in poke 36635 239 for owners of Interface 2. He also gives us the following — *Poke* 36477, 1 makes Willy immune when falling *Poke* 38240, 0 kills off Maria, *Poke* 36358, 0 "turns you into zebedee to go bouncing around the mansion (though you end up in the off licence or stuck in the sand of the beach)', *Poke* 36545, 0 makes the Banyan Tree easier, *Poke* 34795, 47 makes you start in an empty room above the conservatory roof and *Poke* 41983, 255 allows the finishing routine to be seen with only one object collected.

In his fascinating letter he goes on "to clear up the mystery of the names used — Nomen Luni is a mickey take of Imagine's *Zzoom* logo, and a 'Quirkafleeg' is a strange chant expressed while lying on your back like a dead dog in the presence of dead furry animals (see 'The Adventures of Fat Freddy's Cat No 5").

Graeme finishes "I eagerly await the CBM 64 version with four extra rooms, and more from the Matthew Smith stable — but please add an 'Attic' feature — it's so much fun trying to get round it!" However, I should point out I have had some letters from very angry people who do not agree with him. One signed "A frustrated JSW player" was very bitter indeed about the fact that the game could not be completed "honestly" and that since you had to *Poke* around to finish the game there is no proof that the winners "moved miner Willy one inch"

Finally for this week a letter and tape from Chris Jenkins and Paul Rhodes of 104 Vetnor Gardens, Luton, Beds, LU3 3SW who are offering for sale (I don't know how much) a JSW editor — a marvellous utility that allows you to redefine everything including the room layout, the map of the mansion, the position shape and speed of the arrows **Tony Kendle**

The Arcade Corner is a new section for anyone who enjoys playing arcade games If you have any comments from playing tips on difficult games or programs you'd particularly like to praise (or blame) then write to Tony Kendle Arcade Avenue *Popular Computing Weekly* 12-13 Little Newport Street London WC2H 3LD

```
200 IFA$="Z"THENGOSUB6000
210 IFA$='X'THENGOSUB7000
220 IFA$="C"THENGOSUB8000
230 IFA$="S"TNENGOSUB9000
240 IFM$="D"THENPRINT#1,'J":X,Y
250 IFM$="M'TNENPRINT#1,"R":X,Y
280 GOTO70
1000 IFX-15<0ORY+15>HTHENRETURN
1010 X=X-15:Y=Y+15
1020 O$='NORTH-WEST":RETURN
2000 IFY+15>HTHENRETURN
2010 Y=Y+15
2020 O$="NORTH":RETURN
3000 IFX+15>460ORY+15>NTNENRETURN
3010 X=X+15:Y=Y+15
3020 C$='NORTH-EAST":RETURN
4000 IFX-15<0THENRETURN
4010 X=X-15
4020 O$="WEST":RETURN
5000 IFX+15>460THENRETURN
5010 X=X+15
5020 O$='EAST":RETURN
6000 IFY-15<-999ORX-15<0THENRETURN
6010 Y=Y-15::X=X+15
6020 O$="SOUTH-WEST":RETURN
7000 IFY-15<-999THENRETURN
7010 Y=Y-15
7020 D$="SOUTH":RETURN
8000 IFX+15>460ORY-15<-999THENRETURN
8010 X=X+15:Y=Y-15:RETURN
9000 PRINT"s'
9010 PRINT'QQPLEASE INPUT NUMBER
9020 PRINT'QOF REQUIRED OPERATION'
9030 PRINT'QQQ1-DRAW
9040 PRINT QQ2-MOVE'
9050 PRINT'QQ3-CHANGE COLOUR
9080 GET0$:IF0$=''TNEN9060
9070 IF0$='1"THENM$='D
9080 IF0$='2"THENM$= M
9090 IF0$= 3 THEN10000
9100 RETURN
10000 PRINT'sQQINPUT COLOUR NUMBER:'
10010 PRINT'QQQ0-BLACK"
10020 PRINT"QQ1-BLUE
10030 PRINT'QQ2-GREEN"
10040 PRINT"QQ3-RED
10050 GETR$:IFR$=""THEN10050
10060 PRINT#2,VAL(R$)
10070 IFR$="0"THENC$="BLACK'
10080 IFR$="1"THENC$="BLUE
10090 IFR$="2 THENC$="GREEN'
10100 IFR$="3"THENC$='RED
10110 RETURN
```

Plotter
by Sarah Cotton

Microradio

GW6JJN

Cellular radio

Some of you may remember reading the Microradio article on Cellular Radio a few weeks ago and may have some understanding regarding the complexities involved.

If not, you will be like most people in thinking that it is just an extension to the normal radiophone system, but many times better.

The whole concept of Cellular Radio is very new and exciting. To have a telephone in a car is not very new, perhaps, but Cellular Radio offers much more than that. Imagine having, wherever you go, a small phone which you can use to speak to anyone both through the cellular system or through the public telephone system. Of course, the whole thing is handled by computers and you don't need to know what a cell is just to Dial-a-disc.

You don't need to know that as you move from cell to cell, the frequency of your transmission changes automatically within two milliseconds and automatic digitial systems track your every move — all very futuristic.

Two companies have recently been licensed by the government to introduce this incredible system over the next few months. The first is Telecom Securicor Cellular Radio which will operate a system called Cellnet. Telecom Securicor is composed rather obviously of British Telecom who owns 51% and Securicor who owns the other 49% of the firm.

The second company to get a licence is Racal. Not a household word, at least not until they started advertising on television recently just so that everyone will know who they are when the cut-throat competition begins in earnest.

So what is on offer from these firms? Telephone calls from anywhere to anywhere, any time, any place is one thing. Another is the ability to send data at 600 bits per second so anyone can talk to a computer. What this means in practice is that you could set out on a car journey, tell the computer where you are going and the computer will work out the best route knowing of course where the snarl ups are.

Racal say this could save the country nearly two thousand million pounds a year which is what they estimate is wasted on fuel and road accidents, etc.

The whole idea of computer communications on the move is taking off in a big way. Under the government's programme of research into this very subject are big names like Racal, Cambridge University and several other universities, Acorn Computers, BL Technology (of talking Maestro fame), Shell and BP and not least the RAC who see the potential for its members.

It all sounds very expensive, but both Telecom Securicor and Racal deny that. The system already costs less than the current radiophone and the price is falling by the hour.

Ray Berry GW6JJN

This series of articles is designed for radio and microcomputer enthusiasts alike. If you have any queries that you want answered, hints and tips to share, or topics that you would like to see covered, write to: Ray Berry, Microradio, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD

Open Forum

Fighter

on Spectrum

In this game for the 16K machine you are the pilot of a hovering craft. You are armed with missiles and have a total of 5 aircraft. If you crash your aircraft or fire too late you will be destroyed. Keys 6 & 7 manoeuvre the aircraft in the direction of the cursers, 0 fires the missile. Your score is displayed every time you crash or hit a plane.

Graphics

120 — Graphic ABBA
140 — Graphic DBBA
290 — Graphic J

```
   1 GO SUB 1000
   2 PRINT "    SIDEWINDER   PRIN
T : PRINT : PRINT "Hit the USSR
MiGs with your    SIDEWINDER mi
ssiles." : PRINT : PRINT "6&7 for
up&down Fire missile-0"
   3 PAUSE 300
   5 BORDER 5: PAPER 5: INK 0
  10 LET s=0
  20 LET c=0
  30 LET a=1
  40 LET fx=27
  50 LET fy=10
  60 LET ex=0
  70 LET ey=INT (RND*20)+1
  80 LET c=c+1
  90 LET y=fy
 100 LET x=fx
 110 CLS
 120 PRINT AT fy,fx,"    "
 130 IF y=ey AND (x=ex+1 OR x=ex
+2 OR x=ex+3) THEN GO TO 270
 140 PRINT AT ey,ex; INK 2;"    "
 150 LET ex=ex+1
 160 IF ex>27 THEN GO TO 80
 170 LET a$=INKEY$
 180 IF a$="6" AND fy<20 THEN LE
T fy=fy+1
 190 IF a$="7" AND fy>0 THEN LET
fy=fy-1
 200 IF a$="0" OR x<27 THEN LET
x=x-1
 210 IF a$="1" THEN GO TO 800
 215 PAUSE 3
 220 IF x<27 AND x>0 THEN  BEEP
.01,10: GO SUB 250
 230 IF x<27 AND x>ex THEN GO TO
110
 240 GO TO 90
 250 PRINT AT y,x;"-"
 260 RETURN
 270 IF ex<=23 THEN PRINT AT 0,0
;"AIRCRAFT DESTROYED."
 280 LET s=s+1
 290 IF ex>23 THEN PRINT AT 0,0;
"YOU DESTROY ATTACKING AIRCRAFT"
;"BUT YOU ARE ALSO DESTROYED."
 300 PRINT "YOU HAVE BROUGHT DOW
N ";s;" AIRCRAFT"
 310 IF c-s=0 THEN PRIN
T TAB 10,c-s;" HAVE ESCAPED"
 320 IF c-s=1 THEN PRINT TAB 15,
c-s;" HAS ESCAPED "
 330 FOR n=1 TO 800
 340 NEXT n
 350 IF ex>23 THEN GO TO 370
 360 GO TO 80
 370 LET a=a+1
 380 IF a=6 THEN GO TO 440
 390 PRINT
 400 PRINT "DO YOU WISH TO SCRAM
BLE ","FIGHTER NO.",a,"?(Y/N)"
 410 INPUT b$
 420 IF b$<>"y" THEN GO TO 400
 430 GO TO 60
 440 PRINT
 445 PRINT "ALL FIGHTERS HAVE BE
EN SCRAMBLED","DO YOU WISH TO TR
Y AGAIN? (Y/N)"
 450 INPUT c$
 470 IF c$<>"y" THEN GO TO 490
 480 RUN
 490 CLS
 500 STOP
1000 FOR n=0 TO 7: READ a: POKE
USR "A"+n,a: NEXT n
1010 DATA BIN 0,BIN 0,BIN 0,BIN
0,BIN 00001110,BIN 00011011,BIN
01111111,BIN 11111111
1020 FOR n=0 TO 7: READ a: POKE
USR "B"+n,a: NEXT n
1030 DATA BIN 0,BIN 0,BIN 0,BIN
0,BIN 0,BIN 0,BIN 11111111,BIN 1
1111111
1060 FOR n=0 TO 7: READ a: POKE
USR "D"+n,a: NEXT n
1080 DATA BIN 0,BIN 0,BIN 0,BIN
0,BIN 00111000,BIN 01101100,BIN
11111110,BIN 11111111
1070 FOR n=0 TO 7: READ a: POKE
USR "F"+n,a: NEXT n
1080 DATA BIN 10000000,BIN 11000
000,BIN 11100000,BIN 11110000,BI
N 11111000,BIN 11111100,BIN 1111
1111,BIN 11111111,BIN 0
1085 FOR n=0 TO 7: READ a: POKE
USR "J"+n,a: NEXT n
1090 DATA BIN 0,BIN 0,BIN 0,BIN
01000011,BIN 11111111,BIN 010000
11,BIN 0,BIN 0
1100 RETURN
```

Fighter
by S Eaton

Baud Walk

Net gain

The battle of the database, forecast some time ago in Baud Walk now begins in earnest with the launch at the PCW Show of Compunet.

Compunet — which initially is only for Commodore 64 owners, but hopes to add other machines to its stable next year — sacrifices speed of response time for true interactive capabilities.

Its rival in the marketplace, Micronet 800 is just launching its database for the 64. The response time speed on Micronet's system is superior to Compunet, but lacks the degree of flexibility.

That flexibility is what Compunet is banking on; users of the service can upload their own information completely error corrected, thus potentially by the half a million 64 owners can exchange files, sell to each other, even become mini publishers — and what they charge is entirely up to them.

There was little to see on Compunet at the launch, not surprising as it's really a user driven system with the free-for-all area labelled The jungle still being formulated. What Compunet can do is offer commercial software suppliers (telesoftware security. Each modem has a unique identity and downloaded software can only be run with that modem in place.

Nick Green, of Compunet (it's really evolved from an educational brainchild of his called Petnet) says over a dozen software houses are contracted, such as Llamasoft, Severn and Commodore themselves.

Whether all this software finally arrives has yet to be proven. Certainly, Micronet found latest releases hard to come by — but Commodore's market influence may give Compunet an edge.

It costs £99.95 to buy the Commodore modem, which transmits at 1200/75 full duplex and 1200/1200 half duplex, and that includes a year's free subscription to the system! Compunet charges users for storing information and takes commission from anything you sell to other users. Its mailbox charge of 10p is particularly prohibitive.

The terminal software offers a good editing system in an 8k ROM and the network scrolls across the screen a type of 'duck shoot' menu — you hit the space bar to trap an option which ranges from help to store, view etc.

Information is displayed on your 64 in hi-resolution, and that certainly is more attractive than the teletext character display of most viewdata systems. Commodore's Mark Horne commented, "Until now the manufacturer has done more than scratch the surface of true interactive communications."

Whether Compunet can deliver what it promises — good software, teleshopping from Comp-U-card and a bank for home financial services/transactions — remains to be seen. Further information from Compunet Teleservices, Metford House, 15-18 Clipstone Street, London W1P 5DS or VicSoft, Commodore UK, 1 Hunters Way, Weldon, Corby, Northants.

Robin Wilkinson

Baud Walk is a new weekly column with news on networking databases, reviews of modems and software and points of contact for information.

Any readers with experience of networking are asked to send their experiences or news of services to Robin Wilkinson, Baud Walk, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

He can also be contacted on Prestel mailbox 019993727.

Moving Graphics

on BBC

This program shows how VDU 19 can be used to make things move. The computer first draws an oval, then horizontal and vertical lines over it. When the lines are completed they will start to move, changing direction and colour every so often.

Program notes

Lines 10-80	Work out variables
Lines 90-180	Main program
Procoval	Draws oval
Proclines	Draws horizontal lines
Proclines 2	Draws vertical lines
Procmove	Moves lines

```
10 MODE4
20 PRINTTAB(12,10)"PLEASE WAIT"
30 DIM S(90),C(90)
40 T%=0
50 FOR A=0 TO RAD 360 STEP RAD 4
60 S(T%)=SIN(A):C(T%)=COS(A)
70 T%=T%+1
80 NEXT
90 REM=======MAIN PROGRAM=======
100 MODE 2
110 REM
120 C%=7:TI%=0
130 R%=-400:R1%=600
140 PROCOVEL
150 PROCLINES
160 PROCLINES2
170 PROCMOVE
180 END
190 REM======PROCDUPES======
200 DEFPROCOVEL
210 GCOL 0,1
220 VDU 29,640;512;
230 MOVE 0,0
240 FOR A%=0 TO 90 STEP 2
250 MOVE 0,0
260 PLOT 85,S(A%)*600,C(A%)*400
270 NEXT
280 ENDPROC
290 REM======HORIZONTAL LINES======
300 DEFPROCLINES
310 REPEAT
320 MOVE R%,0
330 C%=C%+1:IF C%=16 THEN C%=7
340 GCOL 0,C%
350 FOR T%=23 TO 67 STEP 3
360 DRAW S(T%)*600,C(T%)*R%
370 NEXT
380 R%=R%+30
390 UNTIL R%>400
400 ENDPROC
410 REM======VERTICAL LINES======
420 DEFPROCLINES2
430 REPEAT
440 MOVE 0,400
450 C%=C%+1:IF C%=16 THEN C%=7
460 GCOL 0,C%
470 FOR T%=0 TO 45 STEP 3
480 DRAW S(T%)*R1%,C(T%)*400
490 NEXT
500 R1%=R1%-40:UNTIL R1%<-600
510 ENDPROC
520 REM======MOVEING SECT UN======
530 DEFPROCMOVE
540 C%=7:RN%=RND(6):RN1%=RND(6)
550 REPEAT
560 TI%=TI%+1
570 C%=C%+1:IF C%=16 THEN C%=7
580 VDU 19,C%,RN%,0,0,0
590 PAUSE=INKEY(7)
600 VDU 19,C%,RN1%,0,0,0
610 UNTIL TI%=100
620 TI%=0:RN%=RND(6):RN1%=RND(6)
630 REPEAT
640 TI%=TI%+1
650 C%=C%-1:IF C%=6 THEN C%=15
660 VDU 19,C%,RN%,0,0,0
670 PAUSE=INKEY(7)
680 VDU 19,C%,RN1%,0,0,0
690 UNTIL TI%=100
700 TI%=0:RN%=RND(6):RN1%=RND(6)
710 GOTO 550
720 ENDPROC
```

Moving Graphics
by Mark Dixon

Tony Bridge's Adventure Corner



LOM feature

Last week, I looked at *Lords of Midnight*, and ended up promising help "Never in reviews of the game have I seen any clues," says Paul Newton of Swindon. He seems to be having a lot of trouble His letter was quite long, but he has two main problems — first, once Morkin or Fawkin have the Ice Crown, there seems to be no option offered by the program to destroy it. This wouldn't be so bad, as the game may also be won by defeating the armies of Doomdark — but Paul finds that, even with a much larger army, the Free are defeated

First things first, Paul — as you pointed out, Fawkin the Skulkin can also destroy the Ice Crown (find him at MoonHenge, which is West of the Forest of Lother, between the Downs of Mirron and the Mountains of Toomog, in the Province of the Moon), and this information can be gained by asking at one of the many Towers of the Wise You may also find other characters who can destroy it, such as Lorgrim the Wise (find him up in the top North-East corner of the Map of Midnight, by Lorhenge, on the Plains of Fadrath) and Farflame the Dragonlord, who is very weak. You'll find this character at the Tower of Coroth.

However, it seems, from what I have been told, that you need to get at least one friend to go with Morkin (although Gregg Reid of Dundee reckons that you need all four); although there is a clue about a certain lake that will also destroy the Ice Crown, so if Morkin is alone, he may still be able to destroy the Ice Crown by finding the Lake

As for the strategic problems, I'm reliably informed (by Keir Thorpe from Weybridge, among others), that you must keep Luxor away from Citadels and your main armies — he is the one that the Foul can detect, and they want his blood! Keep him on the move for that reason.

The strategic game must be embarked upon as well the adventure quest, as the armies that you gradually recruit will act as a diversion for the Foul forces, keeping them, you hope, away from Morkin and his companions. If the quest for the Ice Crown proves a failure then you should still be in a position to press on with a military build-up

Several other hints have been passed on to me — Farflame for instance can be very useful, because, as well as being immune from the Ice Fear (or maybe because of this), he can travel much faster than the other characters, who seem to be limited to about eight moves per day Beware Snowhalls and Kenges — there you will find the Hand of Dark, which "brings death to the day" for the finder Don't rely too heavily on finding lakes to refresh your characters; although your forces will be "utterly invigorated" after drinking at a lake, it is a day or two before it can be used again.

Don't rely too much, either on the Lord of Brith — "You'll find", says Keir, "that he may well become utterly afraid at the most unfortunate times, just before a battle and so on. I have also discovered a possible bug — when some of the characters particularly Rorthron and Luxor, move to some locations (Liths, for example), night falls although when you *Look* again, it is still day for them. Also, can someone please tell me why Morkin cannot recruit anyone South of Coroth?" Keir has also found some locations not marked on the map — for example, the Citadel of Dawn due South of Marakith, held by the Free, and the Citadel of Gorgrath on the Plains of Walethor, held by the Foul.

One thing that would seem to be worthwhile doing, is to make a detailed plan of your actions, thus keeping a check on the movements of all the forces at your command — and those of Doomdark, if possible There are so many that you cannot possibly hope to remember where everyone is.

As Dave Wagner, of Acton in London, says: "Despite being not, in any way, a wargame enthusiast, I find it totally enthralling I have never felt so involved before, and can scarcely wait for my adventuring partner to get back from holiday so we can really get going — controlling and coordinating the efforts of so many characters is very hard work and much better shared, I'm sure I really think this is the best adventure yet."

Some final tips from Steven Stoner, who writes from Southampton. He succeeded in classic fashion, that is, with a two-forked prong — a build-up of forces in the south, to take attention away from Morkin in the north. He says, "When travelling, baddies such as ice trolls and wolves are best steered around, as trying to kill lots of these can cause careless loss of life Avoid taking armies through mountain ranges, which exhausts the troops and renders them useless for battle. Before battle, always *Think* to find out if you are outnumbered, and by how much. If the odds look favourable, go for it (bearing in mind earlier comments about Luxor's presence — *TB*) *Seek* at every village, lith and so on, as it usually proves worthwhile At the very beginning, try to find the Lord of Shadows, hidden somewhere in the Forest of Shadows, surrounding the tower of the Moon."

Steven finishes by hoping that *Doomdark's Revenge*, the first sequel to *Midnight* will not be too long in appearing — I don't think you're alone there, Steven!

All in all, it seems that, if you plug away at *Lord of Midnight*, success should not be far behind. So many ways of winning present themselves, however, that the game will take a long while to get stale

Congratulations to all those lucky people who have finished the game — Gregg Reid puts it all down to his reliance on that greatest of all philosophies, "Life is but a cheese pizza"

To finish off, Gregg has a complaint about Beyond Software "Once I'd completed the game, I phoned the Beyond Hot-Line, tried in vain for a week, and also sent a letter with SSAE No answer from the phone or the letter." Come on, Beyond, if you're going to hold a competition, you could at least let everyone know how they've done Many people have bought your game and you should expect to have quite a number of letters about it — don't spoil what is one of the classic games of all time, for any micro!

This series of articles is designed for novice and experienced Adventurers alike Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter So if you have an Adventure you want reviewed or if you are stuck in an Adventure and cannot progress any further write to Tony Bridge Adventure Corner, *Popular Computing Weekly* 12-13 Little Newport Street, London WC2R 3LD

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Immediate run

H Anderson of Edgware Middlesex, writes

Q **Having recently purchased a 48K Spectrum computer, I notice that most of the commercially produced software starts to run as soon as loading is completed, without the need for Run/Enter. I enjoy writing simple Basic programs and would like to be able to do the same. Can you please advise me on a routine to effect this immediate Run?**

A You don't actually need a routine to make a Basic program 'auto-run', the secret lies in the *Save* command used. If you had a program called *Fred* that you wished to auto-run, then you would need to *Save* it using a statement, thus -

Save "Fred" Line

This would cause the program to *Run*, starting at the first line, immediately on loading.

If you wanted the program to start at a line number other than the first one in the program (say Line 300) then the *Save* statement would be . *Save "Fred" Line 300*

Sales figures

Gerald Jess of Kings Lynn, Norfolk, writes:

Q **I am trying to write a program to input sales figures and then print them out under customer, date, etc. What I want to do is dimension the number needed, initialise them and then look for the first empty string so as to put the latest figures in here. Using a Spectrum, I tried *Dim d$(a10):For n=1 To 10:Let d$(n)="" :Next N:For n=1 To 10:If d$(a)"" Then Let d$.(n)="date".***

This doesn't work, why not?

A The Dim statement on the Spectrum, when used with character arrays, needs two parameters

The first one specifies how many dimensions (occurrences) there are, and the second specifies the number of characters occupied by every occurrence

Thus, in your case you have defined an array *(d$)* of 10 occurences each of 1 character (the default) in length.

The reason that your initialisation routine does not work is that it depends on having a zero length occurence (this is not possible on the Spectrum)

Normal string variables do not have a length defined for them, and they can therefore grow and shrink according to the needs of your program. Arrays, however must have a length associated with them and that length never changes (no matter what the contents)

Right and left

J R Thompson of Warrington, writes:

Q **Because the Spectrum doesn't have a *Right$* facility, I am having problems with one line of a program that I am copying from another computer's listing. Could you please explain how *Right$* works on the Spectrum, as I can't even grasp what is written in the manual about it?**

The statement I am trying to convert is *x=10*(Asc (A$-64)+Val (Right$(A$ 1))*

A As you quite rightly point out, the Spectrum does not have a *Right$* (or *Left$*) facility. You will need to make use of the To operator. This allows you to specify a 'slice' of a string to be worked on, eg, Let *A$=B$(4 TO 5)* puts characters 4 and 5 of *B$* into *A$*

To simulate *Right$* you need to code the appropriate *TO* clause, eg *Let A$=Right$(B$ 3)* —takes the last three characters of B$ and puts them in A$. This is written as *Let A$=B$((Len B$)-3 TO Len B$)*. To produce the effect of Left$, you write Let A$=B$(TO 5)—this takes the first five characters of B$

The statement you wish to convert could therefore be written as *Let x=10*(Asc(A$) -64)+ Val(A$) -1 TO Len A$)*

Aerial signals

Stephen Coupland of Thanet, Kent, writes:

Q **I would like to know how I can make an Aquarius and a black and white television send signals from an ordinary aerial. I would also like to know if I can do this without a modem or acoustic coupler?**

A In order to send (or receive) signals from a computer, you need a modem. Either the direct connection, or acoustic coupler type will do for the purpose. The computer will also need an RS 232 interface. I don't know of any one who markets such an interface for the Aquarius I'm afraid. Until one appears, you will not be able to use your machine to communicate with others

Program converter

C Billingham of Birmingham writes

Q **I have an Epson HX20, and my problem concerns converting programs for other computers to run on my computer. On some of the programs the *Poke* statement is used for such things as *Poking* the computer's clock, or setting the screen.**

Could you please tell me if there is some way of getting these addresses? Is there a command statement that will return these addresses using a *Print Chr$* statement or something like that?

A Trying to convert programs which include *Poke* (or *Peek*) statements is a very tricky business. As well as having to understand exactly what the purpose of each of these statements is, you need to know what the equivalent one is on the Epson (if indeed there is one).

However, if we assume that you are able to determine the function of particular *Poke* statements, then you will need to know exactly where the important addresses are in your machines memory

I am afraid that the computer will not be able to tell you what these addresses are, so you will have to discover them yourself. A good source of information would be the *Complete Technical Manual for the HX20* which is obtainable from your Epson dealer priced at £27

Royalty payments

T C Whalley of Peterborough, writes.

Q **In the advertisement for *White Lightning*, it makes the point that we can market games without paying royalties. Does that mean that if another system is used (such as The Quill) we have to pay royalties to the software house supplying the games generator?**

A As far as *The Quill* is concerned Gilsoft who market it only ask that an acknowledgement is made on any game produced mentioning *The Quill*. No royalties are then payable. Most other games generators however do not state this implying that any software produced would be liable to royalty claims

Your question actually raises an important question in terms of copyright. If you use a compiler to produce a faster version of a Basic program, are you liable to have to pay royalties to the compiler supplier? In the world of commercial data processing the answer is no

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ACORN ELECTRON & tape lead & games tape 4 months old £170 Tel (0327) 857422 between 4pm and 6pm

ACORN ELECTRON & tape rec & 2 ... long prog books. & s/w Chuckie Egg & every p.c.w since 5/8/82 & other mags & back-up copies games boxed w manuals & leads Sell £240.00 or £260.00 w s/w portable. £710.00 p&p Tel Billingham 561049 (after 4pm Peter)

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BBC B, 1.2 os books & games (about 25 originals) dustcover magazines six month old excellent condition only £350 or swap for CBM64 with C2N and disc drive excellent condition only Tel (0924) 253261 Mark Bramley

BBC Micro — lots of s/w (original) & tape deck. quick sale £300 Tel 407 6847

BBC & s/w & books DFS fitted £400 40-80 switchable disk drive for BBC & ask s/w £150 Tel Houghton-le-Spring 849342.

BBC s/w inc: Frack, Mr Wiz Fortress Cyan Attack Hunch Back & Mary Otter (All originals) £4 each. Tel 512 790 (Bristol)

ACORN ELECTRON Mint condition. Inc £100 & s/w £160 The Flitwick 715898 After 6pm

WANTED computer with disk and word processing s/w Tel 0253 256 79

ACORN ELECTRON & interface & joystick & recorder & subs & books & loads of software swap for BBCB 1.2os or sale commodore 64 offer Phone 021 742 1446 after 6pm sell for Nick

BBCB software for sale including canyon spitfire killer gorilla, BD bomb alley All original condition Half shop prices or £15 the lot For details ring Eanie on Telford 580614 anytime

BBC 'B' DFS, ATPL Rumboard £385 ono Acorn teletext adaptor, immaculate, £175 ono Microware double density DSF-kit £85 ono Wordwise rom 1 manual (original) £25 Acorn Electron, excellent condition, £168 ono Watford DFS-kit £85 Canterbury 750600

BBC model B 1.2 o/s & view file view calc assorted s/w & joystick £230 ono or £250 & spectrum 48 Tel 01 527 3719

SIDEWAYS Rom board for BBC £30 ono Tel (01) 806 9315

Spectrums for sale

SPECTRUN 48K Kempston Joystick Fuller keyboard sale software inc Scrabble Hobbit Valhalla etc Also Mic rional Interface Offers! – Phone 041 357 1886 after 6 p.m

ONE 48K SPECTRUM plus competition Pro Joystick and literature and software for only £75 – Telephone Ashtead 77314

48K SPECTRUM CASSETTE, Alphacom Printer Kempston Joystick Quickshot 80 tapes Business programing games £225 Brother EP22 Typewriter/printer complete with RS232 interface Tasword Masterfile £180 – Phone Ioan Livingston (0506) 34497

ZX SPECTRUM 48K Profi keyboard Data REcorder Alphacom 32 printer approx £650 software can split printer and data recorder £300 o.n.o – 93 Norton STreet Grantham Lincs.

48K SPECTRUM + printer + currah speech + Kempston interface + cassette recorder and software Swap for CBM 64 or sell for £220 – Tel Romford 66561

48K SPECTRUM Kempston Interface Quickshot Joystick tape recorder computer case Currah-n-Speech 30 games originals £200 or swap for other computer – Tel Burgh Heath 51121

SPECTRUM 48K hardware and software for sale with Amstrad colour includes speech printer light pen etc £250 or software Selling cheap! (everything) – Tel Paul (0582) 3731

48K SPECTRUM with printer printer paper interface 2 with 2 joysticks £250 worth of latest software and tape recorder worth over £600 Sell for only £350 Phone 01 853 3247 after 5 p.m

48K SPECTRUM approx £300 software + magazines 1 years makers guarantee left software includes quill flight simulation match point and scuba dive Fully boxed the lot £160 – Tel (0376) 43543 evenings

300 SPECTRUM originals to sell – Phone Stuart on Bathgate (0506) 56478 or write to 92 Whitelaw Drive Bathgate West Lothian EH48 1RJ

FULL THROTTLE for 48K Spectrum Brand new £3.95 – Tel (022 16) 4357

48K SPECTRUM + WH Smith joystick interface 2 Boxed joystick interface S/w worth £100 all originals All under guarantee £180 – Tel 01-517 2738

48K SPECTRUM ZX Currah micro speech Kempston joystick interface £450 of s/w good condition £125 Tel 01-556 9190

48K SPECTRUM lead on manual ZX printer 10 rolls of paper Kempston

joystick with interface and gimmel books games and mags inc The Hobbit £150 – Tel Merstham 4872 evenings

48K SPECTRUM Joystick interface B+W tv £240 of s/w all originals (Jetset Willy) many mags (PCN Which Micro) worth £470+ accept £250+ – Tel 12.30-4 p.m Wed/Thursday 800 6387 J Bell

SPECTRUM s/w to sell Fighter Pilot Oracles Cave £450 Bulls Eye £1 00 Learn to Read I £5 50 – Tel Brael 5956840

SPECTRUM SOFTWARE for sale 48 originals, inc Aquaplane Terror Devil Devils of the Deep (£4 50) 30 Tanx Nitelar etc (£3) or swap any 8 for Currah Speech Unit – Phone Pelsall 683375

48K SPECTRUM Ser 3 as new board with manuals and leads S/w including Jetpac Vu Calc. Ferguson recorder sell for £130 – Tel 061 428 2208 after 6 p m

48K SPECTRUM GAMES for sale 20 item mostly Arcade style but some adventures £30 for lot or £2 50 each – Nottingham 782299

SPECTRUM S/W Fighter Pilot, £3 Picturesque Editor Assembler and monitor both microdrive compatable £6 Zip Compiler £2, Wanted Lynx s/w – Contact Hugh, Globe House Royal Lane Hillingdon Middlesex

SPECTRUM Currah Speech Unit plus Zon-X 3-channel sound generator in original boxes with manuals Swap sells for your ZX printer some condition – Tel 0532 558247 evenings (David)

48K SPECTRUM in mint condition with Valhalla Tense French, Manic Miner Jetpac, Tranzam Inca Curse Trans tower Buggabo Jet Set, StopSecret etc worth £210 and still under guarantee only £119 or swap for Commodore 64 – Tel 01-837 3817

48K SPECTRUM £200 of all original s/w e Jet Set willy TLL Antics light Pen Joystick + Kempston lfe all £160 o n o – Tel 01 443 0273 Paul

SPECTRUM 48K professional keyboard printer spare rolls, programmable joystick, Interface Quick shot s/w mags £150 – Tel Copthorne 714721

FOR SALE Spectrum software Valhalla £8 White Lightning £8 both used only once Advanced machine language book by Melbourne House brand new £3 50 – phone Simon on (0742) 481671

SPECTRUM SOFTWARE for sale Vu-Calc Vu file and Biorhythms all new and unopened, £2 50 (incl P&P) each or all three for £6 inclusive – Write to K L Chan 8 Cornmarket, Thames Oxon OX9 3DX

SPECTRUM JET SET WILLY for sale £2.50 – Tel 0532 567036 Ask for Andy

48K SPECTRUM printer Kempston Joystick tape recorder lots of software mainly games + 2 books cost new £380 sell for £200 – Tel 075782 270

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SPECTRUM 48K in very good condition plus software including Hisoft Pascal and Devpac plus books including complete Spectrum ROM disassembly £110 o n o – Tel 0721 21340

SPECTRUM SOFTWARE for sale all originals Hungry Horace Road Racers PacMan Pool and Horace Goes Sking cost me £30 any one £3 two for £5 – Tel Talsfield 5938 812

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COMPLETE SPECTRUM system for sale 48K Issue Three computer interface one microdrive two cartridges ZX printer and paper many programs including Pystron and Valhalla, £220 – Phone Thames 2873 (evenings)

48K SPECTRUM GC + tape recorder £100 of s/w Alnc Attact Magic Miner £175 – 01 731 0360 after 6 p m

SPECTRUM S/W to sell games inst. Mugsy Valhalla Trashman Quicksilva Games designer + May Mole – Tel Oxford 66677

SPECTRUM 48K boxed excellent condition £500 worth s/w mags £750 sell £225 – Tel 0324 564451

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SPECTRUM 48K carry case programmable Joystick and interface magazines books plus over £90 of original software £150 – Phone Epsom 28375

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48K SPECTRUM + £75 of original s/w sound comes from TV boxed good condition Tel 01-203 0640 after 7 p m Anmol Malholm (Hendon area)

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48K SPECTRUM guaranteed cassette recorder Kempston interface point master joystick mags £100 of s/w (original) incl Hobbit Jet Set Willy £280 £185 o n o – Tel Bolon 27403

SPECTRUM 48K plus 19 original games in good condition games include Match Point and The Hulk sell for £110 o n o or swap for Atari 600LX – Tel Wendover (0296) 62342

SWAP Spectrum 48K Joystick interface recorder software dust cover book (computer still under guarantee) for C B M 64 (must be within guarantee) with or without extras – Phone Douglas on 507 1704

48K SPECTRUM + interface II + portable televis on Joystick Cartridges and stacks of tapes. Sell for £200 – Tel 04827 49152

SPECTRUM 48K, Quickshot Joystick + interface tape recorder + 5 games £125 – Tel 0702 75764

SPECTRUM 48K s/w originals for sale as new £3 each – Phone P White Epsom 21936 room 24

16K SPECTRUM all manuals and leads issue one £50 o n o 80k Add on for issue one £20 o n o – Hatfield (07072) 67455

16K SPECTRUM for sale! A bargain at £60 hurry! and you get a free radio brand new! that can pick up all stations on earth! – Phone Conn (01 868 4124)

SPECTRUM SOFTWARE for sale Tower of Evil Redweed Hobbit McKenzie Lord of Time Orc Attack Mad Martha 1 and II P Position A W Pat Brad Blasts Lazer Zone etc – Phone Stevo (0709) 767560

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SPECTRUM S/W for sale Lords of Midnight Black Crystal and Sword Fight all in excellent condition £15 or they split 48 originals only – Tel Caerphilly (0222) 881285 after 6 p m Ask for Paul

48K SPECTRUM interface 1 2 microdrives 17 full cartridges fuller orator Currah Microspeech plus cassettes Worth over £500 Sell for £250 (upgrading) – Write to DErek Scott 28D Harden Place Hawick Roxburghshire Scotland

48K SPECTRUM Fuller FOS keyboard Fuller matter unit cassette over £300 of software books mags ban for £250 or swap for Amstrad CPC 464 & colour monitor – Tel Fillongley (834) 41674

ZX SPECTRUM hardware for sale Includes Cambridge Joystick interface Currah Speech Original software also available Abersoft Forth New Generation MC Tutor Offers to D J Iennstte, 52 Finavaon Pl Dundee DD4 9DY or Phone (0382) 43183

UNUSED 48K SPECTRUM upgrade kit from Watford Electronics and other computer chips for sale – Ring John 01 529 5402 after 6 p m

48K SPECTRUM or for swap electronic keyboard joystick or joystick interface £80 of original s/w 5 months old or swap CBM 64 with tape deck – Tel Slough 44764

48K SPECTRUM Interface 2, microline + 4 cartridges cassette recorder + 12 software tapes incl Hobbit, Flag all £235 o n o – 0532 869425 MR

SPECTRUM S/W to sell from Ultimate Sunshine Sinclair Silver Soft + magazines on tape Also Spectrum manual + Intro to Booklet. 3 tapes given for complete ROM disassembly – Tel Jason 0685 441561

48K SPECTRUM Microdrive interface 2 4 cartridges, Alpha comp printer Kempston Joystick over £30 books £200 s/w All originals £300 o n o Tel Hnedsford 76388

SPECTRUM SOFTWARE for sale Los Flics £4 3rd Vortex £4 Black Crystal £5 Love Quiz £3 All originals Others available from Mr Keith Burton 9 Westbourne Terrace Barnsley South Yorkshire

SPECTRUM SOFTWARE for sale Escape 3D Tunnel Moms and Bikers, all £2 each or all three for £5 Moon Alert £3 All perfect condition and originals – Phone 0763 61392 after 5 p m

COMPUTER SWAP

COMPUTER SWAP

Computer Swap entries are limited to 30 words. Either fill in the accompanying form and send to Computer Swap *Popular Computing Weekly*, 12-13 Little Newport Street London WC2H 7LD or telephone 01-437 4343

All software offered through computer swap must be in original condition and for private sale only

It cannot be swapped

Warning It is illegal to advertise pirated software

Please write your copy in capital letters on the lines below

Name ____________

Address ____________

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Dragons for sale

DRAGON 32 Cassette recorder joystick cartridge game + 10 cassettes including the king. Fully working. Also programmers reference guide worth over £200 sell for £100 phone (evenings) (0622) 45250

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DRAGON DOS for sale £50 ono or swap for premier DOS or modem or anything Dragon related phone Peter at Antrim 85345

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Wanted

SPECTRUM SOFTWARE to sell or swap Including Sabre Wulf Orc Attack Moon Alert Mugsy Night Gunner Jet Set Willy Orb for one ultimate games Phone Geoff on Basingstoke (L0256) 53487 anytime

SWAP MY CGL M5 computer with Basic I and Basic G plus Datex recorder, for your Atari 400 48K prefered with recorder exchange my Lazer 200 computer for Atari Roms. St Austell (0726) 83501

SWAP PHILLIPS G7000 videopac games computer with five games good condition for 48K Spectrum no software needed or will sell £50 quit ono Tel 7436058 ask for Dave

SWAP ZX PRINTER for Fuller Master unit o Currah Micro Speech Write to D Scott, 3f D Harden Place Hawick Roxburghshire Scotland TD9 7BY (6 rolls paper included)

SWAP 6 × 3 snooker table plus cues and pool balls for printer compatible with Vic 20 or alfintering Paulon S O S 0702 540452

WANTED ATARI 850 interface module Good cash paid Tel 0684 61792

DRAGON 32 joysticks £100 worth of s/w + books. Will swap for 48K Spectrum Cirencester 61787

SWAP TI99 4A for Spectrum or ZX81 CBM 64 + keyboard Tel 01 555 9571

WANTED ZX81 RS 232 unit with cash preferably memotech £20 ono M Rawlings 22 Westbourne Park Villas London W2 5EA

WANTED fully expanded Acorn Atom circa £40 Will by software if available 0858 722 306

WANTED Mutt swap for sabre wulf or valhalla selling jetman doomsday castle chucks egg TLL Android 2 Classic Adventure £2 75 other available phone Polegate 4336 (After 1 pm)

WANTED Atari 800 or similar will pay up to £80 Ring Honiton 41464

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SWAP Spectrum 48K issue 2 boxed plus RS 232 Inteface original programms plus possible cash adjustment, plus BBC A 1 2 OS Tel (0865) 777510 after 6.30 pm.

SWAP Two scale model cars for radio control in exchange for CBM 64 S/W or peripheral or even sell £25 each phone Keith Scunthorpe 831132

WANTED 48K Spectrum nothing else req'd also wanted Acorn electron software and penpal with electron in Birmingham age 13+ I am 15 phone 021 742-1446 after 6 p m ask for Nick please

WANTED Somewhere in Ireland second hand or age or quickshot joystick plus interface would like interface if can collect in some areas phone seamus (0502) 23503 after six

WANTED Model B BBC micro Tel 946 7464

WANTED Soft switch cartridge be VIC20 pay up to £10 ring Henley Spring 84-6790

48K SPECTRUM Tel 021 742 1440 (after 6 p m)

WANTED 48K Spectrum + electron S/W Tel 021 1446 after 6 p.m.

SWAP Acorn electron + cassette recorder + £100 S/W All leads + terminals 300ks but lower for BBC model B or best CBM64 Tel 021 742 1446 after six.

WANTED Spectrum 48K or CBM 64 with s/w for TI 99 4A or full colour dark room or both il with many extras. Cash adjustment if possible Tel Lymington 0590-78268

WANTED Robot software games for Vic20 unexp 3K/8K/16K and Commodore 64 Send list to DAVE WOODWARD 45 Stonerwood Ave Hall Green Birmingham, B28 0AX. No copies please

WANTED Hell gate for the Commodore 64 £3 cash paid Contact DAVE, 45, Stonerwood Ave Hall Green Birmingham B28 0AX

CBM OWNER seeks beginners to swop tips with I have tape disk drive & modem (CBM) 7 back issues of PCW & others Tel 01 748 6178

WANTED 48K Spectrum Must be under guarantee & with all leads Will consider all offers Phone Maldon (0621) 5945 (after 6pm)

WANTED ZX81 With memotech 64K RAM-PACK will pay £40 o n o also ZX81 with Sinclair 16K wanted. phone 01 733 7184 anytime

SWAP Cordless phone brande new boxed guarantee cost £145 for Atari 1020 printed plotter in very good condition please write to Z. Pere 51 Highfield Ave London NW 11

WANTED A Bett for oaleoe must be in v g condition will pay £15 to £17 50 write to W L lang 6 North Farm Road Lancing West Sussex BN15 9BA

WANTED 200 Channel CB Radio for electronic project, must be brand new and in full working order send full details to T P Richards, 34 cotman Walk Lockleaze Bristol BS7 9UG

OMNIS Apple Data base man system original software with light license transfer £200 or swap apple CCs 7710 serial interface details 0491 874117

Z30 Driven Data entry pad as new retails £589 only £250 or swap BBC Micro or other hardware software details 0491 874117

WANTED 48K Spectrum or BBC Tel 0303 59897

WANTED 48K Spectrum Tel 021 742 1446 after 6pm

WANTED Complete collections of computing or electronic mags Preferably recent home study courses Phone Charles Tel 041 980 9264

WANTED CBM 64 willing to pay up to £100 or £120 with C2N tape recorder Tel 741256 (Maldon)

SWAP Quickshot 2 with DK Tronics Interface plus money and/ or software for alphacom 32 printer Sell Nuway mouse/plug for £5 or include in SWAP Phone Hon on 01 654 8561

WANTED Thunderbirds fireball XL5 supercar stingray the Beatles etc anything models toys games Richard Joynson 110 Courtland Av Ilford Essex

WANTED Full size keyboard for spectrum must be good condition in exchange for orginal software Please write with best le to Mr G P Craig 16 Finlow Terrace Fintry Dundee DD4 9NQ

TDS 64 is a telephone directory system for CBM 64 with a disk drive Store up to 2000 names phone numbers and addresses Fast search on phone number or name Original program for only £20 Tareq al Ahar PO Box 1429 SAFAT Kuwait 435682

WANTED- CBM 64 with cassette recorder will swap for 48k spectrum, interface and stack light rifle recorder and software plus mags and books – Tel 0706 293 076 (after 6 pm)

WANTED, by unemployed electronic engineer any computer junk (ie printer components etc) Can pay postage please help keep me sane! – Tel 0934 513492 ask for Richard

SWAP Sanyo sportster stereo w/dayne metal tape inc FM tuner pack ear phones two speakers with built in amps for modem or speech module for Dragon – Tel HX 247468

SWOP my aquarius computer system 5 items boxed and brand new for 35mm photographic equipment, cameras, lenses, etc. – Phone Farningham 862455 evenings

SWAP 48k Spectrum, all leads cassettes recorder 6 original games DKTronics interface Kempston convertable for Commodore 64 preferably with C2N – Tel 0224 871057

WANTED Spectrum Penpal to swap Hints tips and games Interested! write to Steve 377 Winchester Road, Bassett Sutton, SO1 7DJ, Hants or Phone (0703) 767580

SINCLAIR ZX81 16K Wanted £35 Selling 50 top Spectrum progs at ½ pence ea forth £4 50 Hunter killer £4 phone or write 733484 145 Brynycyn Cardiff

WANTED Spectrum 48K Will pay £60-70 Printer Joystick, Microdrive Write to E Van Dedneap VUUNSE DREEF 75 3 73gks – Hollandsche Rading – Holland – Tel 02157 1429

HELP! wanted – plans 1516 printer C won't supply – can you help – Tel 01-640 3610

SELL OR SWAP BBC B Computer with extras for commodore 64 plus extras or commodore 64 plus money or £350 no offers – Tel 091-263 3334 ask for Stuart

JUST PURCHASED Cumana Delta system disk drive for my Dragon 32 Any help or tips would be appreciated – Tel Staines 58107 after 6 pm

FED UP with no software swap my Vic 20 24k C2N cheapo printer mother board manuals and books for your QL. – Tel 01 986 2206 after 6 pm

WANTED Amstrad software books, tapes etc Ring Darlington (0325) 64357 or write to A A McCammont 11 River garth Darlington Co Durham DL1 3SJ

32k VIC2 + C2N + Joystick intro to Basic & books and mags Swap 48K spectrum Andy 01 641 0675 after 6 pm

SWAP Premier best tape disc cassette (Original) be similar program for Dragon 32. – Tel Staines 58707 after 6 pm

10 Original tapes of spectrum s/h Inc Atac Atac Scuba dive Exchange for ZX printer or other Spectrum accessories Tel 01-083 2961

WANTED Dot Matrix Printer using A4 papers compatible with 2+ spectrum £100 Age immaterial – Philip 0277 224320

SWAP or sell my Philips Video recorder (New) £300 secures or exchange best computer offered tel 0793 641110 9 am till 6 pm (Swindon)

WANTED Modem for CBM 64 Direct correct, any considered – Ring 01-748 6178

WANTED BBC must be in good working order around £200 – Tel Dorking 881618

For sale

ORIC 1 48K plus MCP40 Printer & books £200 software including Xenon-1 forth hunchback Ultra H-attack all in very good condition and guaranteed only £170 ono Wendover (0296 624121)

FOR SALE ZX80 Books with all leads and power supply £15 o n o phone Maldon (0621) 58452 after 6 00 p m

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TI-99 PLUS Extended basic parsec tombstone city cassette leads TV basic o n o Write 32a The Avenue Ramsey Cambs or phone Ramsey 813877 after 6 pm

VISION 5 Snooker for the Acorn Electron for sale only £6.95 Tel (0222) 832184

JETSET WILLY £3 50 Hunter Killer £5 50 Tel Eardisley (05446) 202 After 7pm

CRAZY CAVE MEN, Everest Ascent for sale Tel 01 748 5178

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ORBIS Home Computer Course complete parts in Binders £15 o n o after 7 p m 021 772 6691

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ALPHACOM 32 printer — 4 months old + 1 roll of paper Spectrum Compatible will deliver within a reasonable radius £43 00 Tel Shrewsbury 59356

ZX MICRODRIVE Interface I 5 cartridges + ZX printer £100 ono Tel 01-974 4221

SHARP MZ 80A 48k onscroll monitor + cassette 34 utilities 9 games 9 tape starter pack manual + books £350 ono Tel 0903 680370 eves + weekends

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MACHINE LANGUAGE monitor cartridge (VIC-20) brand new — unwanted gift, best offer secures. Tel 01-366 7115

THREE BOOKS under guarantee Onc I 5 s/w games all leads very good condition £100 ono Tel 4965 Cannock Rede

SENSORY 8 chess computer Cost £165 open to offers Tel 0302 48475

ATARI soft Donky King Robtron Miss Pac Man, Pole position for CBM 64 will say up to £13 each all originals – Tel Wraysbury 2518 after 7 pm.

ADVENTURE HELPLINE

Hobbit on Commodore 64. How do you escape with the treasure from the dragon without being burnt to a crisp? George Macellaro Dental Centre Roberts BKs, Osnabrück, BFPO 36

Voodoo Castle on Vic20 I have got so far as circling the coffin to wake up the Count, but I am unable to find the doll to finally complete the adventure. Any hints would be greatly appreciated David Shpherdson, 3 Tarn Villas, Cowpasture Road Ilkley W Yorks.

Hobbit on Spectrum. How do you get across the dark river get past the bulbous eyes and get down the trapdoor? Paul Milne, 52 Exeter Street, Gateshead, Tyne and Wear

Hobbit on Spectrum. What is the right way in the dry cave as to get out of the goblins dungeon I cannot get my Hobbit to go through the window? I Fitton, 360 Eastern Avenue, Dogsthorpe Peterborough.

Knights Quest on Spectrum. I cannot get out of the deserted wasteland. I have with me a horse, compass, rope and hook. A Shannie 24 Rockwood Avenue, Loughton, Essex.

Pharaohs Tomb on Spectrum. How do I get past the magic panel? Debbie Barbé, Vista du Guet, Cobo road, Castel, Guernsey, Channel Islands.

Madness and the Minotaur I have got Vetar but I can't seem to be able to do anything else S Power, 22 Church Close Pool in Warfedale, nr Leeds, W Yorks LS21 1CN

Voodoo Castle on Vic20 How do I get at the rasee crying outside the window? Also, how do I get past the laboratory without being killed? Alexander Steele, 32 Jubilee Street, London E1

Hobbit on Commodore 64. How do I stop getting caught after escaping from the goblin s dungeon? I have the ring Anthony Green, 2 Edgfield Close, Whitchurch, Bristol 4

Valhalla on Spectrum. Could someone please give me directions from Hellgate to Ofnir Stephen Balmer 'Crescent', Mill Road, Inver Larne Co Antrim, N Ireland.

Castle of Riddles on BBC I cannot get out of the maze of jet-black passages. Have I simply gone the wrong way? Nigel Reed, 7 Crownfields Langford Budville nr Wellington, Somerset.

Hobbit on Spectrum. How do I get Thorin out of the goblin s mountain? I have the ring and I have got out myself. How do you cross Mirkwood? J E Foley 188 Collier Row Road Collier Row, Romford, Essex.

Velnor's Lair on Spectrum. How do I get past the sharks and cross the passage in the pool? R T Sanderson, 28 Feltree Close, Ford Estate, Birkenhead, Merseyside L43

Alice in Wonderland on Memotech. I am lost in Grumbley Forest. How do I get out? Alan Dobson Flat I, 200 Stockport Road, Timperley Altrincham, Cheshire

Pirate's Cove on Vic20 How do you get past the crocs in the caves on Pirates Island? Anthony, 64 Wand Lodge Lane, West Wickham, Kent

Hobbit on Spectrum. I am too thick to find the answers to the riddles and need advice for later on. Please help! Wayne Fletcher 49 Airedale Road, Darton, Barnsley, S Yorks.

Hobbit on Commodore 64. How do I get out of the Elvenkings Halls? And how do I reach the window in the goblins' dungeon? Martin D Wiseman, 110 Lossiemouth Road, Bishopmill, Elgin, Grampian, Scotland.

Voodoo Castle on Vic20 How do you get through the crack into the wall? A Kingman, 5 Fallowfield, Leighton Buzzard, Beds

Espionage Island on ZX—1 I can't get pas the native woman on the grass plain, even with the lucky beads I've had the game for four months and still can't solve it. Frazer Hay 8 Grant Street, Culen, Banffshire Scotland.

SEE
INTERNATIONAL ADVENTURE CLUB (CLASSIFIED)

Diary

Show	Dates	Venue	Admission	Organisers
E2 Fair	Oct 8 10.00am-6.00pm	Pudsey Civic Centre Pudsey W Yorks	£1p adults 80p children	Northern Premier Exhibitions [illegible]
Livingston Computer Fayre	Oct 6-7 10.00am-5.00pm	Peel House Ladywell Livingston W Lothian	£1.00 programme	Soc/W Lothian Computer club [illegible]
Computer Graphics 84 (over 18s only)	Oct 9 10 10.00am-6.00pm Oct 11 10.00am-4.00pm	Wembley Conference Centre	Free in advance £6.00 at door	Cuman Conferences 01-[illegible]
Apricot and Sirius Users North	Oct 16-18 10.00am-6.00pm	New Century Hall New Century House Corporation Street Manchester	Free in advance door [illegible]	16 Bit Computing Dunhame 01-341 [illegible]
Computer Games and Personal Retailer Show (trade only)	Oct 17 18 9.00am-5.30pm	Novotel London W6	Free	Hornes Exhibitions [illegible]
Sirius Computer Education and Games Fair	Oct 20 10.00am-5.00pm Oct 21 10.00am-6.00pm	[illegible] College of [illegible] Education	£1.50 adults £1.00 children	[illegible] and Kilburn [illegible]
Electron and BBC Micro User Show	Oct 26-27 10.00am-6.00pm Oct 28 10.00am-4.00pm	Alexandra Palace London N22	£3.00 adults £2.00 children	Database Publications 061-[illegible]
Home Tech 84	Oct 28-29 10.00am-6.00pm	[illegible] Exhibition Centre	£1.00 adults £1.00 children	[illegible] Exhibitions [illegible]
Computers in Action	Oct 30 10.30am-6.00pm Oct 31 10.00am-5.30pm Nov 1 10.00am-5.00pm	Education Centre Glasgow		Trade Exhibitions 041 [illegible]
Mycomp (Thames Valley Personal Computer Exhibition)	Nov 1-3 10.00am-6.00pm Nov 4 11.00am-5.00pm	Paleman Centre Slough	£0.50 adults £1.00 children	Swan House Special Events [illegible]



Top 10

Spectrum

		Title	Publisher
1	(—)	Daley Thompson's Decathlon	(Ocean)
2	(6)	Lords of Midnight	(Beyond)
3	(1)	Tornado Low Level	(Vortex)
4	(5)	Jet Set Willy	(Software Projects)
5	(2)	Fighter Pilot	(Digital Integration)
6	(4)	[illegible]	(Bug Byte)
7	(7)	Match Point	(Psion)
8	(9)	Sabre Wulf	(Ultimate)
9	(3)	Cavelon	(Ocean)
10	(—)	Full Throttle	(Micromega)

(Figures compiled by W H Smith and Son, London)

ZX81

		Title	Publisher
1	(1)	Alien Raid	(CRL)
2	(4)	Walk the Plank	(Nova)
3	(3)	Krazy Kong	(PSS)
4	(-)	Meteor Storm	(DKTronics)
5	(2)	Planet Raider	(Nova)
6	(-)	Meteoroids	(DKTronics)
7	(-)	Espionage Island	(Artic)
8	(-)	Krypton Raiders	(Nova)
9	(-)	Flight Simulation	(Psion)
10	(-)	Black Crystal	(Carnell)

BBC B

		Title	Publisher
1	(1)	Fortress	(Pace)
2	(4)	Ghouls	(Micro Power)
3	(5)	Smash and Grab	(Superior)
4	(6)	Spitfire Command	(Superior)
5	(3)	Micro Olympics	(Database)
6	(10)	Mr Wiz	(Superior)
7	(8)	Frenzy	(Micro Power)
8	(7)	Aviator	(Acornsoft)
9	(1)	Wallaby	(Superior)
10	(9)	[illegible]	(Micro Power)

(Figures compiled by W H Smith and Son, London)

Dragon

		Title	Publisher
1	(1)	Up Periscope	(Beyond)
2	(3)	Ring of Darkness	(Wintersoft)
3	(-)	Cuthbert in the Mines	(Microdeal)
4	(2)	Chuckie Egg	(A+F)
5	(-)	Eightball	(Microdeal)
6	(-)	Mr Dig	(Microdeal)
7	(9)	Space Shuttle Simulator	(Microdeal)
8	(-)	Dungeon Raid	(Microdeal)
9	(-)	Buzzard Bait	(Microdeal)
10	(5)	Hungry Horace	(Melbourne House)

Commodore 64

		Title	Publisher
1	(1)	Scrabble	(Leisure Genius)
2	(2)	BMX Racers	(Mastertronic)
3	(-)	Beach-head	(US Gold)
4	(8)	Arabian Knights	(Interceptor)
5	(5)	Hunchback	(Ocean)
6	(-)	Decathlon	(Ocean)
7	(4)	Decathlon	(Activision)
8	(-)	Gilligan's Gold	(Ocean)
9	(7)	Space Walk	(Mastertronic)
10	(10)	Encounter	[illegible]

Vic 20

		Title	Publisher
1	(1)	New York Blitz	(Mastertronic)
2	(5)	[illegible]	(Visions)
3	(-)	Flight 015	(Craig Communications)
4	(10)	Mower Mania	(Voyager)
5	(3)	Sub Raid	(Mastertronic)
6	(-)	Tower of Evil	(Thorn EMI)
7	(4)	Phantom Attack	(Mastertronic)
8	(6)	Crazy Kong	(Interceptor)
9	(-)	Duck Shoot	(Mastertronic)
10	(-)	[illegible]	(Mastertronic)

Books

		Title	Publisher
1	(5)	Introducing Commodore 64 Machine-code	(Granada)
2	(1)	Commodore Programmer's Reference Guide	(Pitman)
3	(-)	Guide to Playing the Hobbit	(Melbourne House)
4	(2)	Machine-code Sprites and Graphics on Spectrum	(Sunshine)
5	(6)	Practical Spectrum Machine-code	(Shiva)
6	(8)	Discover Your Spectrum	(Century)
7	(-)	Atari Games	(Usborne)
8	(9)	100 Programs for the BBC Micro	(Prentice Hall)
9	(-)	Space Games	(Usborne)
10	(-)	Computer Programming for Spectrum	[illegible]

(Figures compiled by Websters/Bookwise)

Book Ends

BUMPER BOOK

Christmas comes but once a year and around now book companies try various ploys to get your money. One such ploy is the 'bumper' book containing a vast mish-mash of previous material from other books.

Obviously it involves no effort on the part of the publishers beyond commissioning a new cover so usually such books are relatively inexpensive. Provided you examine them carefully to check that you don't already have a lot of the material, these books can be a good idea.

The Complete Commodore 64 is one such book; it contains a large guide to programming in Basic, a lot of games to type in with notes and a large section on peripherals like disc drives and printers. There are appendices on hex/dec convertion, the 6502 instruction set and an, inevitably incomplete list of software.

Book *The Complete Commodore 64*
Price *£9.95*
Micro *Commodore 64*
Supplier *Granada Publishing, 8 Grafton Street, London W1X 3LA*

GOOD START

Step by Step Programming for the Commodore 64 is the first volume in a guide to the use of basic Commodore commands for calculation, sprite design, peek and poke, and so on.

There are numerous screen shots of what your TV should look like, which is more help than a dozen other ways of helping people understand the information.

In fact, even within volume 1 you are introduced to relative complex techniques, designing sprites screen maps and the like, so it's fairly rich in information.

If the fact that each part of this series is £5.95 doesn't put you off, then this is a pretty good start to Commodore programming.

Book *Step by Step Programming on the Commodore 64*
Price *£5.95*
Micro *Commodore 64*
Supplier *Dorling Kindersley Goldstar, 1 2 Henrietta Street, London WC2E 8PS*

This Week

Program	Type	Micro	Price	Supplier
Star Avengers	Arc	Amstrad	£8.95	Kuma
Outpost	Arc	Atari	£12.95	Quicksilva
Jet Pac	Arc	BBC	£7.95	Ultimate
Lingo	Ed	BBC	£12.95	Cms
Know your Psi Q	Ut	BBC	£9.95	Mirrorsoft
Castle of Jasoom	Ad	Commodore 64	£14.95	Quicksilva
Ah Diddums	Arc	Commodore 64	£5.50	Beau Jolly
Ancipital	Arc	Commodore 64	£7.50	Llamasoft
Ant Attack	Arc	Commodore 64	£7.95	Quicksilva
Magic Micro Mission	Arc	Commodore 64	£7.95	Quicksilva
Poster Paster	Arc	Commodore 64	£6.95	Task Set
See Saw	Arc	Commodore 64	£7.95	Quicksilva
Snowman	Arc	Commodore 64	£7.95	Quicksilva
Strontium Dog	Arc	Commodore 64	£7.95	Quicksilva
Summer Games	Arc	Commodore 64	£14.95	Quicksilva
Attitude of Mind of Da Vinci	Ed	Commodore 64	£2.95	Weirdsoft
Master Mind	Ed	Commodore 64	£9.95	Mirrorsoft
Doddle	Ut	Commodore 64	£14.95	Quicksilva
Jeffe Plan	Ut	Commodore 64	£9.95	Mirrorsoft
Know your own Personality	Ut	Commodore 64	£9.95	Mirrorsoft
Your Team	Ut	Commodore 64	£9.95	Marlborough
City Bombing Raid	Arc	Dragon	£2.00	Melior Software
Binary Land	Arc	MSX	£8.95	Kuma
Dog Fighter	Arc	MSX	£8.95	Kuma
Driller Tanks	Arc	MSX	£8.95	Kuma
Eric and the Floaters	Arc	MSX	£9.95	Kuma
Fire Rescue	Arc	MSX	£7.95	Kuma
Database	Ut	MSX	£19.95	Kuma
Home Budget	Ut	MSX	£14.95	Kuma
Wdpro	Ut	MSX	£29.95	Kuma
Out of the Shadows	Ad	Spectrum	£5.95	Mizar Computing
Strontium Dog	Ad	Spectrum	£6.95	Quicksilva
The Final Mission	Ad	Spectrum	£5.95	Incentive
Battlezone	Arc	Spectrum	£8.95	Quicksilva
Blood and Guts	Arc	Spectrum	£6.95	Quicksilva
Dishes	Arc	Spectrum	£6.95	Cataclysmic
Psytraxx	Arc	Spectrum	£5.95	The Edge
Starbike	Arc	Spectrum	£6.95	The Edge
The Journey	Arc	Spectrum	£7.95	Temptation
Zombie Zombie	Arc	Spectrum	£6.95	Quicksilva
Star Seeker	Ed	Spectrum	£9.95	Mirrorsoft
Eric Bristow's Pro Darts	S	Spectrum	£6.95	Quicksilva
Jeffe Plan	Ut	Spectrum	£9.95	Mirrorsoft
Know your own Personality	Ut	Spectrum	£9.95	Mirrorsoft
Master Mind	Ut	Spectrum	£9.95	Mirrorsoft
Your Team	Ut	Spectrum	£6.99	Marlborough
Megavault	Arc	Vic20	£9.95	Beau Jolly

Key: Ad — adventure/Arc — arcade/Ed — education/ S — strategy simulation/Ut — utility

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to: This Week, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP... 12 13 Little Newport Street, London WC2R 3LD

New Releases

GOLDEN IDOL

Next up for the Commodore from Beyond is *Aztec*, a joy stick and keyboard controlled adventure apparently based on Indiana Jones' crowd pulling exploits. As a game it isn't quite like anything else, but reminds me vaguely of *Oracles Cave* on the Spectrum. You control a Jones-like figure (complete with safari suit and cap) and move him around a maze of levels and ladders.

The idea of the game is to find a missing golden idol, hidden somewhere in the maze. The figure can run, jump, crawl, set dynamite, fight, open boxes, etc. There are a variety of nasty things lurking in the depths of the cages including spiders, snakes, dinosaurs and beautifully animated Zulu type warriors.

Although the skills you need to play the game are arcade orientated — fast reactions playing the major part — but there are others, like remembering the levels that end in a void and noticing trapdoors. Certainly the number of events within the game lift it well above the usual level.

Some of the graphics in *Aztec* are astonishing — watch out for the man-eating plant and the tiger — although the actual levels and ladders are very simple, suprisingly so given the complexity elsewhere.

Program *Aztec*
Price *£8.95*
Micro *Commodore 64*
Supplier *Beyond*
Durrant House
8 Herbal Hill
London EC1R 5EJ

INDEPENDENT

Twin Kingdom Valley was one of the very few graphically illustrated adventures that did not originate on the Spectrum — more than that it was not even made available on the machine. Until now.

Bug Byte describe the Spectrum version as 'the greatest achievement in the history of home computing'. Hmmmm. Well, anyway the program has more pictures than the Commodore 64 version with as much, if not more, detail.

As an adventure *Twin Kingdom* had good, if not ecstatic, reviews. It doesn't understand very complex sentances, but let's you know quite clearly what words it does and does not know, typing help actually lists them out for you.

The graphics are thoughtfully designed with a large, vaguely cartoon-like quality. There are other characters in the adventure who exhibit a certain independance or randomness depending upon your degree of cynicism.

There are 180 different locations in the adventure illustrated with 150 different graphics — in the limited time for wandering about, I discovered enough to get me pretty hooked. But why can't I find flint in a disused flint quarry?

Program *Twin Kingdom Valley*
Price *£7.95*
Micro *Spectrum*
Supplier *Bug-Byte*
1 Stanley Street
Liverpool L1 6AD

ALIEN ATTACK

Despite the failure of the Dragon machine there are still independent software houses supporting it with quite reasonable software.

Death Valley has the kind of smooth sprite graphics that only seem to have appeared fairly recently on the Dragon. In this case you get a rather neat alien landscape with spinning planets and puffing volcanoes and — almost inevitably — the Dragon's unenviable yukky green background.

The game looks good but since it consists almost entirely of blasting aliens it can't be said to hold the attention overmuch.

In my first attempt at the game I survived about five alien attack waves.

Still, I never did like alien blasting and it does looks nice. And it looks green.

Program *Death Valley*
Price *£8.80*
Micro *Dragon*
Supplier *Micro Data*
Unit A4
38 Sheridan Road
Frimley
Surrey
GU16 7DU

Pick of the week

ILLEGAL GOODIES

Acornsoft have, quite honestly, been responsible for some of the dullest computer programs I've ever seen.

Until recently their top sellers were tedious versions of *Meteors* and *Invaders*.

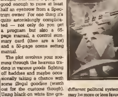
Things may be looking up, though, with *Elite*, a program good enough to raise at least half an eyebrow from a Spectrum owner. For one thing it's quite astonishingly complicated — not only do you get a program but also a 65-page manual, a control summary card (thee are a lot) and a 50-page scene setting manual.

The plot involves your zooming through the heavens trading in various goods fighting off baddies and maybe occasionally taking a chance with some illegal goodies (watch out for the customs though). Using black-on white line graphics has meant that enough memory is available for a tremendous number of different facilities — there are dozens of different controls for navigation, various charts, combat flight, etc.

The graphics are superb and are animated in 3D in a similar way to *Battlezone* — you can fly around a static spaceship in all dimensions and it's very impressive.

Playing the game involves a quite incredible number of different considerations, each of the ships you may meet in space has different performance charactreristics and is equipped with different weapons.

Different planets have



different political systems that may be more or less favourable to you, highly entrepreneurial, trade orientated and so on.

Elite is by far the most impressive game Acornsoft have ever produced and, in terms of complexity, may be the best game ever for the BBC.

Warp factor five, Scotty.

Program *Elite*
Price *£14.90*
Micro *BBC*
Supplier *Acornsoft*
Betjeman House
104 Hills Road
Cambridge CB2 1LQ

DESPERATE

Slowly, perhaps more so than with any other machine, independent software is emerging for the QL. Despite the sophisticated features of the machine, the first programs to be released are following a weary and familiar path.

Quantum Soft is a small independent company that has issued two games at £9.95 each, *Hangman* and *Mastercode*, which turns out to be *Mastermind*. Both games are available on one microdrive for £14.00

Hangman lets you choose from a number of different databases for the words. Standard graphics are used to create an OKish man whose fate is in the hands of your vocabulary

The program plays *Hangman* well enough and has clearly had some effort spent on it but it is intrinsically unoriginal. It doesn't even match up to even the humblest Spectrum game On the other hand, QL owners must be desperate for some software and I have seen bigger rip-offs in the early days of a new machine. Worth it if you're desperate.

Program *Hangman*
Price *£8.95*
Micro *QL*
Supplier Quantum Soft
Marloes
Borrowby
Thirsk
North Yorkshire

HAMPSTEAD MAN

Hampstead is a machine-code text adventure being released by Melbourne House at the same time as *Sherlock Holmes* — although it is radically different in scope and intention.

Aside from the plot, the really odd thing about *Hampstead* is that it is written almost totally with *The Quill*. Which only goes to prove once again that if you want to write text adventures than *The Quill* is the program for you.

Hampstead is, technically, an unsophisticated adventure — nearly all the commands are simple Verb/Noun combinations but then that's hardly the point. The real point of *Hampstead* is that it is *funny* and the humour is genuine unlike some of the witless stuff which usually populates computer games.

The idea is not so much to find *Hampstead* but to attain *Hampstead* — to live and breath its very soul (Meumère) You must rise up from your disgusting dole ridden origins, learn the correct codes and manners and, instead, become the kind of person who writes books looking sociologically and sympathetically at the plight of the unemployed.

Read the right books, wear the right clothes and marry into wealth. As an adventure it's moderately difficult but has obviously been designed with people who dont usually play adventure games in mind.

In fact, playing *Hampstead* is almost certainly going to become a pretty Hampstead-type thing to do It has already been featured in one Sunday colour supplement and will almost certainly be featured in others

I hope Gilsoft are being given something other than the mention that they ask for using *The Quill* on this one

Program *Hampstead*
Price *£9.95*
Micro *Spectrum*
Supplier *Melbourne House*
Castle Yard House
Castle Yard
Richmond
TW10 6TF

TIME ZONE

Kokotoni Wilf you will have seen advertised a lot recently as a sort of super *Jet Set Willy*.

In fact it is only like *Jet Set* in the same way that lots of programs are — you dodge things, manoevre carefully and collect other things.

Other than that it is actually quite original. The idea is to collect the various pieces of the dragon amulet scattered throughout time — the hero is Kokotoni Wilf (I suppose Wilf beats Tharg as a name, hardly the stuff of heroes I'd have thought, though.)

There are 60 screens divided into six different time zones populated with the appropriate scene The first age in the game has been made relatively easy so that you can get used to the way it works,



but even so I only managed about five out of ten screens

The graphics are nice and mostly pretty detailed although Kokotoni himself is a bit small. Having different time zones makes for sharply contrasting screens and a good time should be had by all if you like this sort of game.

A Commodore version is also available.

Program *Kokotoni Wilf*
Price *£5.95*
Micro *Spectrum*
Supplier *Elite*
55 Bradford Street
Walsall
W Midlands

COMING SOON

Christmas is rapidly shaping up into a positive bonanza of exciting programs for the Spectrum.

After Deus Ex Machina and *Avalon*, we now have a pre-release glimpse of *Tir Na Nog* from Gargoyle Games.

This animated graphics adventure, due to be released in mid-October, looks as though it ought to sell awesomely In some respects it is the closest thing yet to an interactive movie

Tir Na Nog is loosely based on some authentic Celtic myths and concerns the adventures of the hero Cuchulainn as he tries to reassemble the fragments of the Seal of Calum.

The central character is represented by a beautifully animated (64 different frames) figures — 56 pixels high — who lollops determinedly across the screen under your control (complete with hair waving in the wind)

The figure walks, protects himself with any useful sword or stick he might have found, picks up and drops things and searches the world for clues to his quest. The entire vast landscape can be viewed from any compass direction with a special key being used to change the 'camera' viewpoint.

There are barrows, harps, volcanoes, a distant castle, doors locked and unlocked and a variety of other creatures — most of them dangerous, with whom you will have to deal or fight. One group are the Sidhe, strange monkey-like creatures which look less harmless than they are Other characters may be persuaded by one means or another to divulge important information or even give you parts of the Seal of Calum.

Finding your way around, working out what to do and how to treat the other creatures you meet requires a mixture of lateral and logical thought, fighting skill and, maybe, your local library where more information on the myth can be found.

Since obtaining some parts of the Seal depends on completing a number of sub-plots, Gargoyle are humorously speculating that this may be the first adventure that may take years to play and complete

The plot has everything an adventurer could want and the graphics are amazing — the simple expedient of making the part of the screen, ie, the bottom section, all one colour has meant that there is no colour-res problem and consequently not a trace of flicker

If you have to buy one game at Christmas for your Spectrum this, so far (September) could well get my vote

I'm looking forward to the finished game with great anticipation.

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market. If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases, *Popular Computing Weekly*, 12-13 Little Newport Street London WC2H 3LD



Write on, Rom

Have you ever noticed how human nature makes us want to leave our mark on the world?

I'm not talking of ambition or the altruistic ideals of leaving the world a better place, I mean the desire to scratch your name on the rocks by Niagara Falls.

It comes to nearly all of us from time to time. We somehow want to communicate with unknown people who visit the same place at a future date.

The most famous example of this is the "Kilroy Was Here" messages said to be left all over the world by American servicemen during World War II. Various explanations have been proposed for this particular fashion, including espionage activity, markers left by the catering corps, and adolescent hysteria. I think that whoever was actually leaving their mark in this way was really combining two impulses. They were 'joining the club' by all writing the same name and they were satisfying the need to communicate with peoples, unknown when in strange places.

The men and women who produce computers are people just the same and are often afflicted with this same desire to leave their mark. Where better to leave their mark than in the systems they are producing. Usually such signatures are well hidden, the point is for such marks only to be found by a small number of people who are probably looking for just such a mark.

As a simple and well known example, have a look at the end of the Basic Rom in a BBC micro (using the monitor I mean, don't take the machine to bits). Right at the end the message "roger" appears, left there by Roger Wilson the software author.

Acorn is not the only manufacturer to give its workers a chance to leave their names in Rom. The Camputers Lynx Rom starts off with the names Davis and Susy. Davis is Davis Jansons one of the Rom's authors — I don't know who Susy may be, perhaps another software writer, or a friend.

Even Sinclair does not seem to be totally immune to the graffiti game, although I have never found or heard reference to any names left in the Rom. Those mysterious letters used to indicate different versions of QL Rom such as FB and AH are the initials of various engineers working for Sinclair Research. JM for example stands for John Mathieson. I cannot say which ones are about to be given pay rises and which ones have now moved to the opposition. Perhaps the final version of the QL will be called CS.

Perhaps the most interesting case to come my way recently is that of a pre-production computer which has been recently announced in the UK (I cannot name it directly) which contains the names FRED B, TERRY RT, and MIKE L at 48160 (BC20h). Perhaps these names will be erased in the production version. No other names appear this explicitly in the Rom but I came across something of interest whilst hunting for something else. On entering "SYS 52550" some additional names are printed to screen, these being F BOWEN, J COOPER, B HERD, and T RYAN.

Now these may be legitimate employees of the microcomputer manufacturer, but I have a sneeking suspicion that they actually represent the software house, a completely different organisation. Their names were well hidden and this may reflect the mistrust of the manufacturer by the software writers.

What next in the Rom graffiti world? I have yet to find a sentence or anything other than initials and names.

If anyone else has found any interesting things in their Rom why not drop me a line?

John Cochrane

Nine, nine, nine

Puzzle No 126

I asked Tom to think of a digit (not zero) and write it down three times in a row. I then asked Dick to think of a different digit and to write this three times alongside Tom's three digits. Finally, Jane was to choose a third digit, different from the other two, and write it down three times at the end of the row so forming a nine-digit number.

eroonetwothreefourfi
eroonetwothreefourfi
eroonetwothreefourfi
eroonetwothreefourfi
eroonetwothreefourfi
eroonetwothreefourfiv

For instance, if they had thought of one, two and three respectively the number written down would have been 111222333. However, the number that was formed proved to be just one less than a perfect square.

What was the number?

Solution to Puzzle No 121

There were 17576 blocks cut from an original cube 26 units along each side. A square pyramid of 37 tiers in height would use just 17575 of the blocks.

The program calculates the number of individual blocks in square pyramids of ascending size. It then checks to see if the number (plus one) is equal to a cubic number.

```
10 T = 0 20 N = 1 30 T = T + N * N 40 X = (T +
1) (1/3) 50 X = VAL (STR$(X)) 60 IF X =
INT(X) THEN PRINT N T,X 70 N = N + 1 80
GOTO 30
```

Winner of Puzzle No 121

The winner is M J Fecher, Hungerford Drive, Maidenhead, Berks, who receives £10.

Rules

The closing date for entries to Puzzle No 126 is October 8. If the puzzle can be sensibly solved using a computer, then the winner will have included a listing of the program used to find the correct answer.

The Hackers

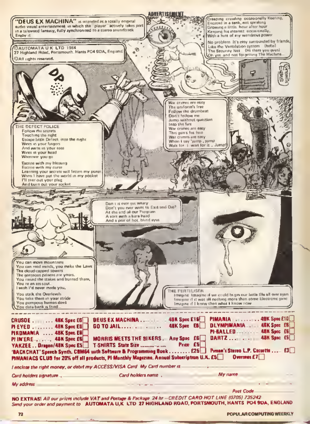
About that floating-point parallel-processing board you sold me for real-time signal processing.

Yes?

The handbook is incomprehensible. Here on page one for example.

Where Derek dog is explaining to Cathy cat about decimals...

?


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©All rights reserved.
Creeping crawling occasionally floating, Encased in a tank, not speaking Growing a little, hour after hour Keeping his interest occasionally, With a hint of my wondrous power
No problem It's easy surrounded by friends, Like the Ventilation system (hello) The Security Net (Hi there you guys) Oh yes and not forgetting The Machine...
Gremlin Evans
DP
War crimes are easy The uniform's free Follow the drumbeat Don't follow me Jump without question Into the fire War crimes are easy This gun's for hire War crimes are easy When I say "jump", jump Wait for it wait for it .. Jump!
THE DEFECT POLICE
Follow the secrets Touching the right Escape little Defect, into the night Wires in your fingers And earth in your toes Wires in your head Wherever you go
Escape with my blessing Escape with my curse Learning your secrets will fatten my purse When I have put the world in my pocket I'll tear out your plug And burn out your socket
Don't it ever get weary Don't you ever want to Exit and Die? At the end of our Program A sore with a bare head And a pair of hot, blind eyes
You can move mountains You can read minds, you make the Laws The cloud-capped towers The gorgeous palaces are yours. You raised the stakes and burned them, You're an ass soul. I wish I'd never made you.
You stalk the Overlevels You take them in your stride You pompous human devil You data bank is fried...
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DEUS EX MACHINA ... 48K Spec £15
GO TO JAIL ... 48K Spec £6
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